IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

INTELLECTUAL VENTURES I LLC and INTELLECTUAL VENTURES II LLC,	§ § § § §	
Plaintiffs,	§ §	
-v-	§ § §	**6:21-CV-1088-ADA**
GENERAL MOTORS COMPANY and GENERAL MOTORS LLC,	§ § §	
Defendants.	§ §	

MEMORANDUM IN SUPPORT OF CLAIM CONSTRUCTION ORDER

Before the Court are Defendants General Motors Company and General Motors LLC (collectively, "Defendants" or "GM") opening and reply briefs (Dkt. Nos. 47 and 56, respectively) and Plaintiff Intellectual Ventures I LLC and Intellectual Ventures II LLC ("Intellectual Ventures" or "IV") responsive and sur-reply briefs (Dkt. Nos. 55 and 66, respectively).[1] The Court conducted a claim construction hearing on November 4, 2022. The Court provides this memorandum in support of the Claim Construction Order issued concurrent with this memorandum, and hereby incorporates-by-reference the claim construction hearing and transcript as well as the demonstrative slides presented by the parties during the hearing. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc); *see also Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015).

---

[1] Citations to the parties' filings are to the filing's number in the docket (Dkt. No.) and pin cites are to the page numbers assigned through ECF.

TABLE OF CONTENTS

I.   BACKGROUND

IV asserts that GM infringes claims of U.S. Patent Nos. 6,832,283 (the "'283 Patent");

7,382,771 (the "'771 Patent"); 7,684,318 (the "'318 Patent"); 7,891,004 (the "'004 Patent");

8,811,356 (the "'356 Patent"); 8,953,641 (the "'641 Patent"); 9,232,158 (the "'158 Patent");

9,291,475 (the "'475 Patent"); 9,602,608 (the "'608 Patent"); 9,681,466 (the "'466 Patent");

9,934,628 (the "'628 Patent"); and 10,292,138 (the "'138 Patent") (collectively "Asserted

Patents").

II.   LEGAL PRINCIPLES

A. Claim Construction

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to

which the patentee is entitled the right to exclude.'" *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312

(Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*,

381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by

considering the intrinsic evidence. *Id.* at 1313; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d

858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc.*, 262 F.3d

1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the

specification, and the prosecution history. *Phillips*, 415 F.3d at 1314; *C.R. Bard, Inc.*, 388 F.3d at

861. The general rule—subject to certain specific exceptions discussed *infra*—is that each claim

term is construed according to its ordinary and accustomed meaning as understood by one of

ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d

at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003); *Azure

Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014) (quotation marks omitted)

("There is a heavy presumption that claim terms carry their accustomed meaning in the relevant

community at the relevant time.") *cert. granted, judgment vacated,* 135 S. Ct. 1846 (2015).

"The claim construction inquiry . . . begins and ends in all cases with the actual words of the claim." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). "[I]n all aspects of claim construction, 'the name of the game is the claim.'" *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) (quoting *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998)) *overruled on other grounds by Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. 2015). First, a term's context in the asserted claim can be instructive. *Phillips*, 415 F.3d at 1314. Other asserted or unasserted claims can also aid in determining the claim's meaning, because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term's meaning. *Id*. For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id*. at 1314–15.

"[C]laims 'must be read in view of the specification, of which they are a part.'" *Id*. (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Id*. (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). This is true because a patentee may define his own terms, give a claim term a different meaning than the term would otherwise possess, or disclaim or disavow the claim scope. *Phillips*, 415 F.3d at 1316. In these situations, the inventor's lexicography governs. *Id*.

The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex, Inc.*, 299 F.3d at 1325. But,

"'[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.'" *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1323. "[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

The prosecution history is another tool to supply the proper context for claim construction because, like the specification, the prosecution history provides evidence of how the U.S. Patent and Trademark Office ("PTO") and the inventor understood the patent. *Phillips*, 415 F.3d at 1317. However, "because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.* at 1318; *see also Athletic Alts., Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (ambiguous prosecution history may be "unhelpful as an interpretive resource").

Although extrinsic evidence can also be useful, it is "'less significant than the intrinsic record in determining the legally operative meaning of claim language.'" *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id*. at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the

particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported

assertions as to a term's definition are not helpful to a court. *Id*. Extrinsic evidence is "less reliable

than the patent and its prosecution history in determining how to read claim terms." *Id*. The

Supreme Court has explained the role of extrinsic evidence in claim construction:

> In some cases, however, the district court will need to look beyond the patent's
> intrinsic evidence and to consult extrinsic evidence in order to understand, for
> example, the background science or the meaning of a term in the relevant art during
> the relevant time period. *See, e.g., Seymour v. Osborne*, 11 Wall. 516, 546 (1871)
> (a patent may be "so interspersed with technical terms and terms of art that the
> testimony of scientific witnesses is indispensable to a correct understanding of its
> meaning"). In cases where those subsidiary facts are in dispute, courts will need to
> make subsidiary factual findings about that extrinsic evidence. These are the
> "evidentiary underpinnings" of claim construction that we discussed in *Markman*,
> and this subsidiary factfinding must be reviewed for clear error on appeal.

Teva Pharm. USA, Inc. v. Sandoz, Inc., 574 U.S. 318, 331–32 (2015).

B.   Departing from the Ordinary Meaning of a Claim Term

There are "only two exceptions to [the] general rule" that claim terms are construed

according to their plain and ordinary meaning: "1) when a patentee sets out a definition and acts

as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either

in the specification or during prosecution."[2] *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d

1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362,

1365 (Fed. Cir. 2012)); *see also GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309

(Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the

plain meaning in two instances: lexicography and disavowal."). The standards for finding

lexicography or disavowal are "exacting." *GE Lighting Sols.*, 750 F.3d at 1309.

---

[2] Some cases have characterized other principles of claim construction as "exceptions" to the
general rule, such as the statutory requirement that a means-plus-function term is construed to
cover the corresponding structure disclosed in the specification. *See, e.g., CCS Fitness, Inc. v.
Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002).

To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw*, 158 F.3d at 1249.

To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp. v. Bos. Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

III.   LEVEL OF ORDINARY SKILL IN THE ART

It is well established that patents are interpreted from the perspective of one of ordinary skill in the art ("POSITA"). *See Phillips*, 415 F.3d at 1313 ("[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application."). The Federal Circuit has advised that the "[f]actors that may be considered in determining the level of skill in the art include: (1) the educational level of the inventors; (2) the type of problems encountered in the art; (3) prior art solutions to those problems; (4) the rapidity with which innovations are made; (5) sophistication of the technology; and (6) education level of active workers in the field." *Env'tl Designs, Ltd. v. Union Oil Co. of California*, 713 F.2d 693, 696 (Fed. Cir. 1983). "These factors are not exhaustive but are merely a guide to determining the level

of ordinary skill in the art." *Daiichi Sankyo Co. Ltd. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007).

The parties do not dispute the qualifications of a POSITA, at least not at this stage in the case. Regarding the '004 Patent, GM's expert, Scott Andrews, opines that a POSITA would have "a suitable engineering discipline such as electronic or electrical engineering together with at least two years of experience with automotive electronics systems and electronic circuit design, specifically vehicle and computer networking systems. Higher level degrees could be used to offset the total level of work experience and vice versa." Dkt. No. 47-1 at ¶ 33. IV's expert, Tim Williams, assumes that Mr. Andrews' definition of a POSITA is correct. Dkt. No. 55-1 at ¶ 36.

Regarding the '158 Patent, GM's expert, Scott Andrews, opines that a POSITA "would be someone with at least a four-year undergraduate degree in electrical engineering or computer science or a closely related field and at least two years of experience in the field of digital imaging. Higher level degrees could be used to offset the total level of work experience and vice versa." Dkt. No. 47-1 at ¶ 36. IV's expert, Edwin Hernandez-Mondragon, assumes that Mr. Andrews' definition of a POSITA is correct. Dkt. No. 55-2 at ¶ 62.

Regarding the '283 Patent, GM's expert, Scott Andrews, opines that a POSITA "would be someone with a degree in a suitable engineering discipline such as electronic or electrical engineering together with at least two years of experience with automotive electronics systems and electronic circuit design, specifically vehicle and computer networking systems. Higher level degrees could be used to offset the total level of work experience and vice versa." Dkt. No. 47-1 at ¶ 39. IV's expert, Edwin Hernandez-Mondragon, assumes that Mr. Andrews' definition of a POSITA is correct. Dkt. No. 55-2 at ¶ 51.

Regarding the '475 Patent, GM's expert, Scott Andrews, opines that a POSITA "would be

someone with a degree in a suitable engineering discipline such as electronic or electrical engineering together with at least two years of experience with automotive electronics systems, such as vehicle control systems, systems for transmitting and receiving communications from a vehicle including location-based services. Higher level degrees could be used to offset the total level of work experience and vice versa." Dkt. No. 47-1 at ¶ 42. IV's expert, Edwin Hernandez-Mondragon, assumes that Mr. Andrews' definition of a POSITA is correct. Dkt. No. 55-2 at ¶ 58.

Regarding the '608 Patent, GM's expert, Scott Andrews, opines that a POSITA "would be someone with a degree in a suitable engineering discipline such as electronic or electrical engineering together with at least two years of experience with automotive electronics systems, such as systems for transmitting and receiving communications from a vehicle and systems that employ location-based or location oriented information technologies. Higher level degrees could be used to offset the total level of work experience and vice versa." Dkt. No. 47-1 at ¶ 45. IV's expert, Edwin Hernandez-Mondragon, assumes that Mr. Andrews' definition of a POSITA is correct. Dkt. No. 55-2 at ¶ 67.

Regarding the '628 Patent, GM's expert, Scott Andrews, opines that a POSITA "would be someone with a degree in a suitable engineering discipline such as electronic or electrical engineering together with at least two years of experience with automotive electronics systems and electronic circuit design, in particular the recording and processing of video data, and the use of sensors to detect various events in a vehicle. Higher level degrees could be used to offset the total level of work experience and vice versa." Dkt. No. 47-1 at ¶ 48. IV's expert, Edwin Hernandez-Mondragon, assumes that Mr. Andrews' definition of a POSITA is correct. Dkt. No. 55-2 at ¶ 54.

Regarding the '318 Patent, GM's expert, Christopher Hansen, opines that a POSITA "would have had at least a Bachelor of Science in Electrical Engineering, or an equivalent field,

as well as three years of experience in Wi-Fi / IEEE 802.11 wireless networking standards development. A greater amount of relevant educational experience could compensate, to a degree, for less than three years' work experience; and vice versa." Dkt. No. 47-27 at ¶ 38. IV's expert, Tim Williams, assumes that Mr. Hansen's definition of a POSITA is correct. Dkt. No. 55-2 at ¶ 51.

Regarding the '771 Patent, GM's expert, Christopher Hansen, opines that a POSITA "would have had at least a Bachelor of Science in Electrical Engineering, or an equivalent field, as well as three years of experience in Wi-Fi and mobile wireless product development. A greater amount of relevant educational experience could compensate, to a degree, for less than three years' work experience; and vice versa." Dkt. No. 47-27 at ¶ 66. IV's expert, Edwin Hernandez-Mondragon, assumes that Mr. Hansen's definition of a POSITA is correct. Dkt. No. 55-2 at ¶ 47.

Regarding the '356 Patent, '641 Patent, '466 Patent, and '138 Patent GM's expert, Paul Min, opines that a POSITA "would have had a Bachelor of Science degree in electrical engineering, computer engineering, computer science, or closely related fields, and a minimum of two years of experience in the cellular wireless communication field." Dkt. No. 47-28 at ¶ 84. IV's experts, Tim Williams and Edwin Hernandez-Mondragon, assume that Mr. Min's definition of a POSITA is correct. Dkt. No. 55-1 at ¶¶ 39, 43, 47; 55-2 at ¶ 65.

Given that the parties do not dispute the qualifications of a POSITA at this time, and considering the factors that may be considered in determining the level of skill in the art, the Court finds that a person of ordinary skill in the art is as defined by GM's expert, as discussed above for each Asserted Patent.

III.   CONSTRUCTION OF AGREED TERMS

The parties agreed to the construction of the following terms/phrases:

Claim Term/Phrase	Agreed Construction
assigned time intervals" and "in a time interval" '356 Patent: Claims 1, 22, 43, 45	Plain and ordinary meaning.

Dkt. No. 72 at 2 (Join Claim Construction Statement). In view of the parties' agreements on the proper construction of the identified terms, the Court hereby **ADOPTS** the parties' agreed constructions.

IV.   CONSTRUCTION OF DISPUTED TERMS

The parties' dispute the meaning and scope of thirty-two (32) terms or phrases in the Asserted Patents. Each dispute is addressed below.

A. '283 Patent

The '283 Patent, titled "Method for Addressing Network Components," issued on December 14, 2004, and was filed on June 15, 2001. The '283 Patent "relates to a method for addressing components of a network, especially in the case of data bus systems in transport means, in which each component is assigned a first address for the mutual communication within the network and the first addresses are stored in a central register." '283 Patent at 1:10–15. The Abstract of the '283 Patent states:

> Method for addressing components of a first network, especially in the case of data bus systems in transport vehicles, in which each component is assigned a first address for the mutual communication within the network and the first addresses are stored in a central register, in which at least one particular component of the first network communicates with another network, this component, when dialling into the second network, is assigned a second address by the latter and, within the first network, addressing takes place on the basis of function-specific address components, identical function blocks of the components being addressed via identical function-specific address components.

Claim 1 of the '283 Patent is an illustrative claim and recites the following elements (disputed terms in italics):

1. Method for addressing *components* of a first network in a data bus system in a transport vehicle, in which each *component* is assigned a *first address* for mutual communication within the network and the *first addresses* are stored in a central register, wherein at least one particular *component* of the first network communicates with a second network, said one *component*, when dialling into the second network, is assigned a second address by the second network, and *wherein, within the first network, addressing takes place on the basis of function-specific address components*, identical function blocks of the *components* being addressed via identical function-specific address *components*.

a. "component"

Disputed Term	IV's Proposal	GM's Proposal
"component"	"a functional block subdivided from a control device"	Plain and ordinary meaning.

1. Analysis

The term "component" appears in Claims 1-3 and 21-22 of the '283 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same general meaning in each claim. The parties dispute whether the term "component" requires construction.[3] Claim 1 specifies that each "component" is in a "data bus system" of "a first network," and at least one such component communicates with "a second network." Figure 1 depicts "a number of control devices [*i.e.*, components 2-6] to which the method according to the invention" is used. '283 Patent at 5:55–57.

---

[3] The parties' arguments for this disputed term can be found in Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 10-11); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 12); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 7-8).

Fig. 1

Id. at Fig. 1 (highlight added). The specification further indicates that identifying the component

or device by its function-specific address component of a function block is the "special feature of

the method according to the invention":

> Most of the components are constructed as control devices, the
> function blocks designating certain units such as, for example, an
> amplifier or a unit which controls the car telephone. Each function
> block can consist of hardware and associated software.
>
> *The special feature of the method according to the invention* then
> consists in that each component of the one network which is to be
> addressed is addressed via the function-specific address component
> of a function block.

Id. at 3:13–23 (emphasis added). The specification further states that a component may be further

subdivided into function blocks:

> In addition to the logical addressing of the components/devices, the
> functional addressing is also provided. In this addressing, the

> components are subdivided into function blocks. In this manner, each function block can be addressed via the function-specific address component independently of the logical address of the component to which the function block is allocated.

Id. at 4:26–33. The Detailed Description discloses examples of subdividing the devices, as illustrated in Figure 1 above. *See, e.g.*, *id.* at 6:52–53 ("The control device 3 has two function blocks 8, 9 which are functionally addressed by means of a function-specific address component 0x51 and 0x06, respectively"), 9:28–31 ("As can be seen in FIG. 2, component 2 with the logical address 0x100 has the function blocks with the function specific address components 0x22, 0x06, 0x08 and 0x40 via which the individual function blocks within the data bus 1 are addressed."). Indeed, Claim 1 recites that "addressing takes place on the basis of function-specific address components, identical *function blocks* of the components being address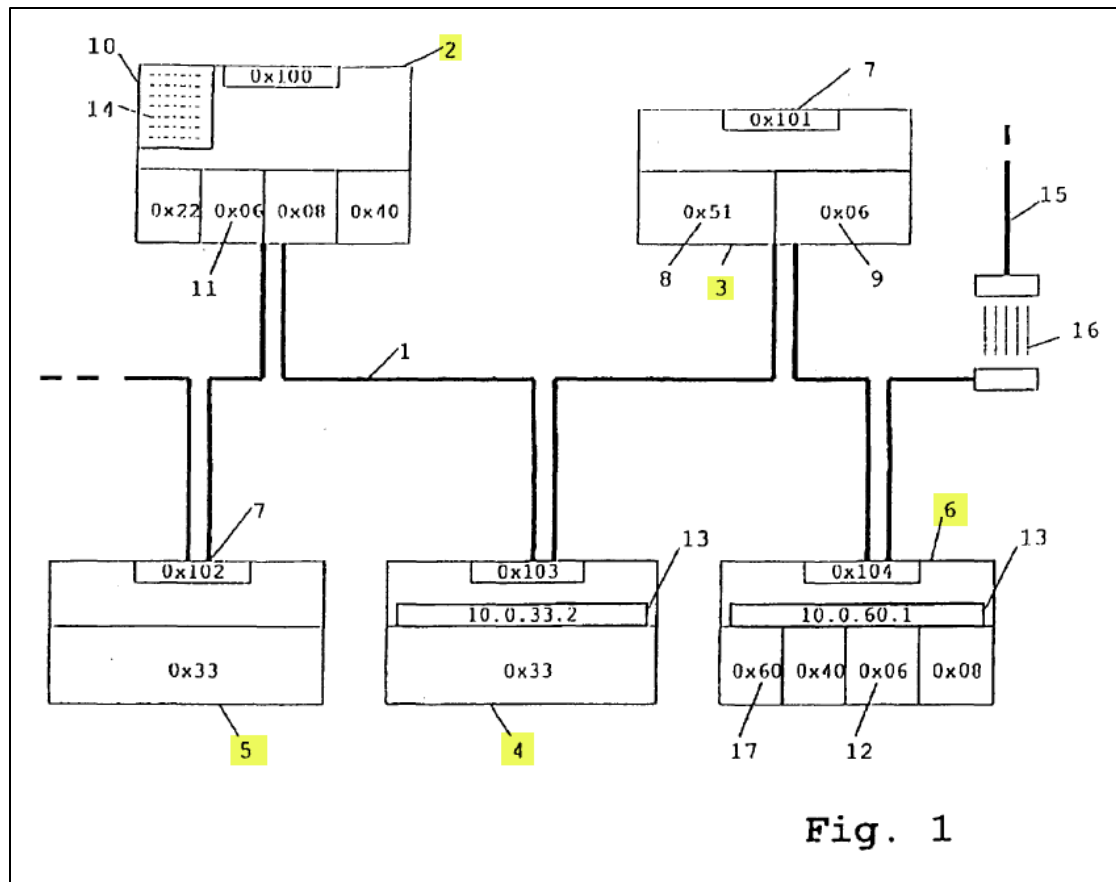ed via identical function-specific address components." Accordingly, a POSITA would understand the term "component" means "a device having one or more function blocks."

IV contends that the phrase should be construed to mean "a functional block subdivided from a control device." GM argues that this treats "component" as if it only refers to a part of the functional address of a device. GM contends that this results in non-sensical claims when IV's construction is used for each instance of "component." The Court agrees with GM. Furthermore, IV's construction introduces the terms "control device," "functional block," and "subdivided," which do not appear in the claims. Accordingly, the Court rejects IV's construction.

2. Court's Construction

For the reasons set forth above, the Court construes the term **"component"** to mean **"a device having one or more function blocks"**

b. "first address"

Disputed Term	IV's Proposal	GM's Proposal
"first address"	"a logical address that specifies the physical location of a control device, and a function-specific address associated with a subdivided component of the device"	Plain and ordinary meaning.

1. Analysis

The term "first address" appears in Claims 1, 3, and 21 of the '283 Patent. The Court finds

that the term is used consistently in the claims and is intended to have the same general meaning

in each claim. The parties dispute whether the term "first address" should require both a logical

address component and a function-specific address component. [4]

The description of the term "first address" is introduced in the Summary of the Invention

as follows:

> [T]he individual components can be addressed via the logical
> address component of the first addresses. The network components
> can advantageously evaluate the first addresses stored in the central
> register in order to check the configuration of the entire system.
>
> In addition to the logical addressing of the components/devices, the
> functional addressing is also provided. In this addressing, the
> components are subdivided into function blocks. In this manner,
> each function block can be addressed via the function-specific
> address component independently of the logical address of the
> component to which the function block is allocated.

'283 Patent at 4:21–33. The Detailed Description further describes that each device has a "first

address" that includes both a logical address component and a function-specific address

component:

> Each control device 2 to 6 and every other component connected to
> the data bus 1 *is assigned a first address which, on the one hand,
> can specify the physical location of the component and, on the other*

---

[4] The parties' arguments for this disputed term can be found in Plaintiff's Responsive Claim
Construction Brief (Dkt. No. 55 at 8-9); Defendant's Reply Claim Construction Brief (Dkt. No.
56 at 12); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 7-8).

hand, also its functional association. To designate the physical location of the control device 3, a logical address 7, 0x101 in the example, is assigned within the system. In the example, the address 7 is an address stored in hexadecimal code, the address assigned depending on the system and only being specified by way of example in this case. The network master 2 can determine the position of the relevant component 2 to 6 due to the address formation used at the data bus 1 or the order of registration at the data bus 1 due to the logical addressing.

The control device 3 has two function blocks 8, 9 which are functionally addressed by means of a function-specific address component 0x51 and 0x06, respectively. The function block 8 can be addressed via the function-specific address component 0x51 and a further function block 9 can be addressed via the function-specific address component 0x06. The functionalities can be restricted to individual hardware components having the corresponding software but can also address an entire hardware group. A hardware group can consist of control devices 3 to 5 with routines, sensors and actuators.

Id. at 6:39–62 (emphasis added). Figure 2 further depicts "a simplified representation of an allocation of addresses to different components as can be stored in the central register according to the invention." *Id.* at 5:58–60. Both portions of the "first address" are shown in Figure 2. The logical addresses in the "LogicalAddr" column identify the physical location of a control device, and the function-specific addresses in the "FunctionAddr" column identify the function-specific address component of the device.

LogicalAddr	FunctionAddr	InstAddr	IP Addr
0x100	0x22	0	10.0.22.1
	0x06	1	
	0x08	1	
	0x40	1	
0x101	0x51	0	10.0.51.1
	0x06	2	
0x102	0x33	1	10.0.33.2
0x103	0x33	2	10.0.33.3
0x104	0x60	0	10.0.60.1
	0x40	2	
	0x06	3	
	0x08	2	

Id. at Figure 2 (highlight added). Finally, during the prosecution history, the patentee explained that the "first address" can have both logical and function components, equating it with "the invention":

> Applicant's attorney explained the *invention* and how the components can have *logical as well as functional addresses* and further can be assigned IP addresses from the second network."

Dkt. No. 55-5 at 4 (emphasis added). Accordingly, the Court construes "first address" to mean "an address that includes a logical address component and a function-specific address component."

GM argues that IV takes two well-understood terms ("first" and "address") and imports new concepts (*i.e.*, "logical address," "physical location," "control device," and "subdivided") that do not appear in Claim 1. The Court generally agrees with GM, and thus, does not adopt IV's construction.

GM further argues that IV's position is directly contradicted by Claim 10, which states "the first address assigned to each component specifies a physical location and/or a functional association of each component." GM contends that IV's construction would nullify the "or" language in these claims and render the above phrases entirely superfluous since "first address"

alone would already include both a "logical address" and "function specific address component." The Court disagrees that the doctrine of claim differentiation applies in this instance given the specification and prosecution history discussed above. *Howmedica Osteonics Corp. v. Zimmer, Inc.*, 822 F.3d 1312, 1323 (Fed. Cir. 2016) ("Claim differentiation is not conclusive; it is a guide, not a rigid rule."); *see also, Hormone Research Found., Inc. v. Genentech, Inc.*, 904 F.2d 1558, 1567 n.15 (Fed. Cir. 1990) (stating that the doctrine of claim differentiation "cannot overshadow the express and contrary intentions of the patent draftsman").

2. Court's Construction

For the reasons set forth above, the Court construes the term **"first address"** to mean **"an address that includes a logical address component and a function-specific address component."**

c. Claim 1 in its entirety

Disputed Term	IV's Proposal	GM's Proposal
Claim 1 in its entirety	Plain and ordinary meaning. Not indefinite.	Indefinite

1. Analysis

Claim 1 is a method claim, and the parties dispute whether it is indefinite for failing to recite any positive steps.[5] GM argues that Claim 1 of the '283 Patent is indefinite because it is a method claim without any active, positive steps. According to GM, the limitations recite conditions of the system or environment, including using the past tense, are written passively, and/or describe functional characteristics of the components in the claim. GM contends that if a

---

[5] The parties' arguments for this disputed term can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 12-14); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 11-12); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 12-13); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 8-9).

system exists in which addressing would take place as described, but no addressing takes place, it is unclear whether that would meet this claim even without any alleged infringer performing any action.

The Court finds that Claim 1 is not indefinite. Claim 1 recites "addressing components…. in which each component is assigned a first address … and the first addresses are stored in a central register." The method further requires "at least one particular component of the first network" to communicate with a second network. And that the component is "assigned a second address by the second network," when dialing into the second network. Finally, Claim 1 requires that the addressing within the first network "takes place on the basis of function-specific address components, identical function blocks of the components being addressed via identical function-specific address components." To be clear, these steps must be performed to infringe Claim 1. *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311 (Fed. Cir. 2006) ("Method claims are only infringed when the claimed process is performed, not by the sale of an apparatus that is capable of infringing use.").

Contrary to GM's contention, Claim 1 is not merely an intended use, and is not the same as the claim in *In re Hartman* and the other cases cited by GM. In *In re Hartman*, the patentee sought to claim "a novel business method," thus leaving the claims without any meaningful limitations. *See* 513 F. App'x 955, 957 (Fed. Cir. 2013). Likewise, Claim 1 is distinguishable from *Ex Parte Elrich,* which only claimed a use without any active positive steps delineating how the use was actually practiced. *Ex Parte Erlich*, 3 U.S.P.Q.2d 1011 (B.P.A.I. 1986) (invalidating claims 6 and 7 "6. A process for using monoclonal antibodies of claim 4 to isolate and purify human fibroblast interferon" and "7. A process for using monoclonal antibodies of Claim 4 to identify human fibroblast interferon."). Like *Elrich*, *Ex Parte Werner Fries*, also recites a use

without any active, positive steps. No. 1997-3643, 2001 WL 1057428, at *5 (B.P.A.I. 2001).

Accordingly, the Court finds that GM failed to showed by clear and convincing that Claim 1 is

indefinite.

2. Court's Construction

Claim 1 is not indefinite, and is given its **plain and ordinary meaning.**

d. "wherein, within the first network, addressing takes place on the basis of a function specific address component" and "wherein addressing within the first network takes place on the basis of the function-specific address components"

Disputed Term	IV's Proposal	GM's Proposal
"wherein, within the first network, addressing takes place on the basis of a function specific address component" and "wherein addressing within the first network takes place on the basis of the function-specific address components"	Plain and ordinary meaning.	"wherein, within the first network, addressing takes place on the basis of function-specific address components which excludes standard communication protocols such D2B or MOST"

1. Analysis

The phrase "wherein, within the first network, addressing takes place on the basis of a

function specific address component" appears in Claim 1 of the '283 Patent. The phrase "wherein

addressing within the first network takes place on the basis of the function-specific address

components" appears in Claim 21 of the '283 Patent. The Court finds that the phrases are used

consistently in the claims and are intended to have the same general meaning in each claim. The

parties dispute whether the patentee made clear that the term "addressing . . . on the basis of a

function specific address components," does not include standard communication protocols such

as D2B or MOST. [6]

The Court finds that the patentees did not disclaim standard communication protocols. However, the specification indicates that the addressing that takes place on the basis of function-specific address components is used instead of, or in addition to standard communication protocols such as D2B or MOST. For instance, the specification states that these standard communication protocols may be "in addition to" the claimed addressing that uses the "function-specific address component":

> Using optical data buses as a basis, *a first type of addressing* which uses *the function-specific address components* is provided within the data bus *in addition to the standard communication, for example D2B or MOST protocol*. In addition, the first addresses can be set up in the manner of the Internet Protocol so that it is possible within the data bus to perform addressing virtually as in the Internet, a part of this address, however, being the function-specific component.

'283 Patent at 2:46–54 (emphasis added).

> The *addressing in a network*, for example the data bus, *can take place*, on the one hand, *via an address component* which describes the local arrangement of the components along the data bus *such as* can be the case, *for example, in the D2B or MOST protocol and/or via a function-specific address component* which describes the function of a component or its subordinate function blocks.

Id. at 3:7–13 (emphasis added).

As disclosed above, rather than describing addressing based on D2B and MOST protocols as being exemplary of the claimed "addressing . . . on the basis of a function-specific address," the specification refers to them as separate protocols. By using the phrase "in addition to," or referring to them in the conjunctive as "and/or," the specification is defining addressing on the basis of a

---

[6] The parties' arguments for this disputed term can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 14-16); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 12-14); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 13-14); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 9-10).

function-specific address components, and not on standard communication protocols such as D2B and MOST. Thus, the patentees indicated that the term "addressing . . . on the basis of a function-specific address component" is used instead of, or in addition to addressing using the D2B or MOST protocols. *Techtronic Indus. Co. v. ITC*, 944 F.3d 901, 907 (Fed. Cir. 2019) ("A disavowal must be clear, but it need not be explicit.").

IV argues that dependent Claims 6 and 7 add the limitations "wherein data are transmitted via an optical data bus" and "wherein the optical data bus is one of a D2B or MOST data bus." IV contends that the specification further confirms that the data bus can be an "optical D2B or MOST data bus with basically time-synchronous data transmission." Dkt. No. 55 at 13 (citing '283 Patent at 6:11–15). IV further argues that the use of the term and/or does not specify that D2B, MOST, or other current/future communication protocols cannot be used together and cannot include both.

The Court agrees that the specification does not exclude standard protocols, as GM appears to contend. Instead, the specification indicates that the claimed "addressing . . . on the basis of a function-specific address component" is used instead of, or in addition to addressing using the D2B or MOST protocols. This is consistent with dependent Claims 6 and 7, which add the limitations "wherein data are transmitted via an optical data bus" and "wherein the optical data bus is one of a D2B or MOST data bus." In other words, the specification teaches that the claimed functional addressing can be used in the same system as prior art D2B and MOST, but that the claimed addressing is different than the prior art protocols. To be clear, the claims do not exclude D2B and MOST, as GM contends, but instead require more than just the use of D2B or MOST protocol.

2. Court's Construction

For the reasons set forth above, the Court construes the phrase **"wherein, within the first**

network, addressing takes place on the basis of a function specific address component," and

the phrase **"wherein addressing within the first network takes place on the basis of the**

function-specific address components" to mean **"wherein, within the first network,**

addressing takes place on the basis of function-specific address components used instead of,

or in addition to standard communication protocols such as D2B or MOST."

       e. **"2. Method according to claim 1, wherein a component of the first
network registers a communication with the second network with the at
least one particular component which communicates with the second
network . . ."**

Disputed Term	IV's Proposal	GM's Proposal
"2. Method according to claim 1, wherein a component of the first network registers a communication with the second network with the at least one particular component which communicates with the second network . . ."	Plain and ordinary meaning. Not indefinite.	Indefinite.

      1. Analysis

The parties dispute whether Claim 2 is indefinite.[7] GM argues that Claim 2 is indefinite

because the specification does not describe "a component of the first network" registering "a

communication with the second network." GM also argues that the recited "component" of the "at

least one particular component" is not described in the specification and is unclear from the claim.

GM contends that the specification does not resolve the ambiguity created by the "components

within the components" language. The Court disagrees.

---

[7] The parties' arguments for this disputed term can be found in Defendant's Opening Claim
Construction Brief (Dkt. No. 47 at 14-16); Plaintiff's Responsive Claim Construction Brief (Dkt.
No. 55 at 14-15); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 14-15); and
Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 10-11).

The specification states that in addition to logical addressing, functional addressing is also provided and the components may be subdivided into function blocks. '283 Patent at 4:26–29. The hierarchy of addresses is shown in all figures of the patent, where element 13 is an IP Address, and elements 12 and 17 are functional components.

Fig. 1
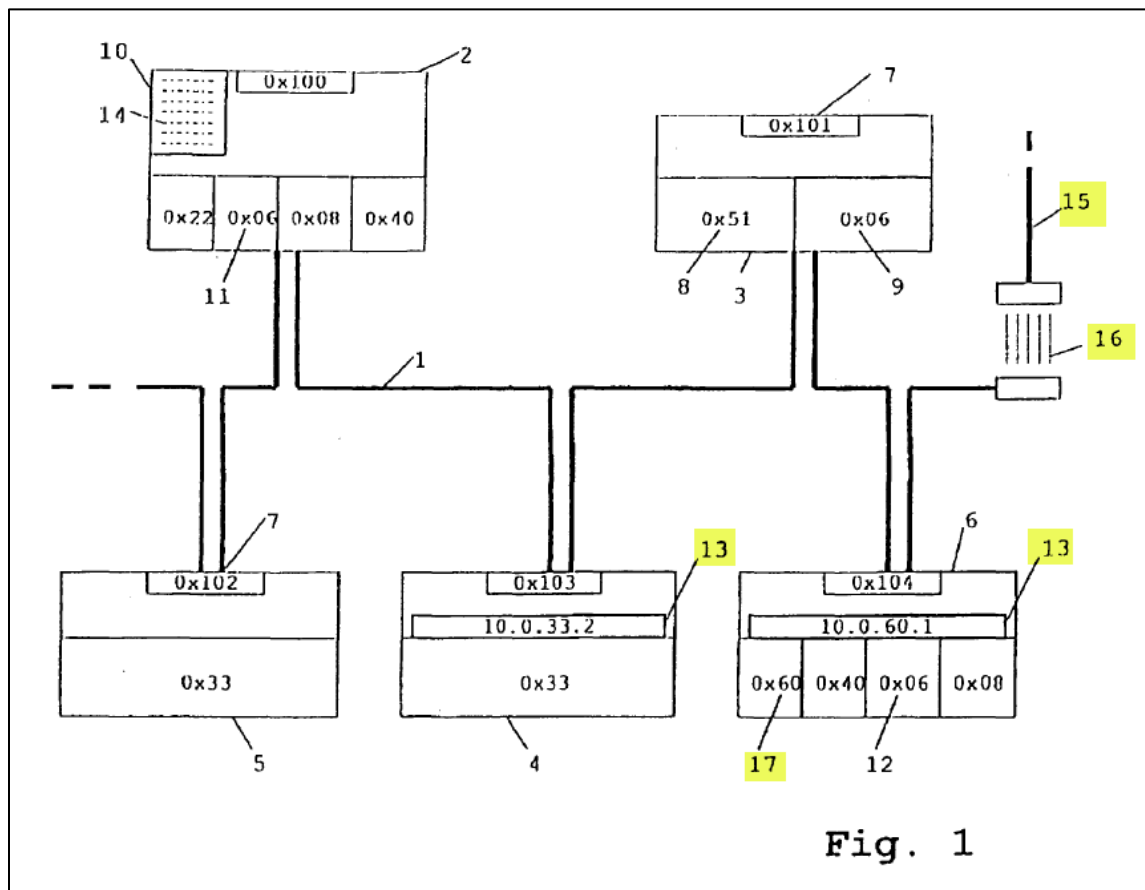
Id. at Figure 1 (highlight added). The specification explains that the second network internet 15 can be connected to the first optical network via a radio transmission link 16 via a mobile telephone. *Id.* at 8:35–37. The first network is addressed from the second network. *Id.* at 3:51–54. The specification discloses an embodiment where the IP address 13 of component 6 is IP address 10.0.60.1, enabling control device 6 to be addressed from the external internet. *Id.* at 9:59–62. To prevent unauthorized access by a communication from the second network 15 to the data bus 1, the central register of the network master 2 contains information on which main function

components 17 can receive an address. *Id.* at 9:14–19. When messages are received, their access

authorization and their syntax can be checked in this manner. *Id.* at 9:20–21.

As a result, a POSITA would understand that "a component of the first network" (*e.g.*,

network master 2) registers a communication with the second network (*e.g.*, when messages are

received, their access authorization and their syntax can be checked in this manner) with the at

least one particular component (*e.g.*, control device 6 via main function block 17), which

communicates with the second network (*e.g.*, internet 15). This is confirmed by the second portion

of Claim 2 which states "whereupon a component of the at least one particular component, with

the internal address from the first network, enables communication with an external IP address

and thereupon sets up communication with the second network." *See e.g., id.* at 9:59–62.

Accordingly, the Court finds that the specification disclose a description of registering as recited

in Claim 2.

2. Court's Construction

Claim 2 is not indefinite, and is given its **plain and ordinary meaning.**

B. '771 Patent

The '771 Patent, titled "Mobile Wireless Hotspot System," issued on June 3, 2008, and

was filed on March 13, 2003. The '771 Patent "relates to wireless Internet access points, and in

particular to providing a mobile wireless access point for use with high-speed wireless devices."

'771 Patent at 1:5–7. The Abstract of the '771 Patent states:

> The invention relates to wireless Internet access points, and in
> particular to providing a mobile wireless access point for use with
> high-speed wireless devices. In particular, the system allows client
> devices configured for short-range, high-speed wireless Internet
> access to use said system to access the Internet while in a mobile
> environment, such as a passenger vehicle.

Claim 1 of the '771 Patent is an illustrative claim and recites the following elements

(disputed terms in italics):

> 1.A mobile wireless hot spot system, comprising:
> a) a short-range, high-speed wireless access point operative to communicate with short-range client devices;
> b) a long-range, wireless Internet access interface operative to communicate with the Internet; and
> c) *a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface,*
>
> wherein said mobile wireless hotspot system is a stand-alone system that enables client devices configured for short-range, high-speed wireless Internet access to use said mobile wireless hotspot system to access the Internet *without the need to access an external service controller server.*

a. "a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface"

Disputed Term	IV's Proposal	GM's Proposal
"a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface"	"a system that directs data between a local area network and the Internet by managing the data path between a wireless access point and an Internet access interface"	Plain and ordinary meaning.

1. Analysis

The phrase "a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface" appears in Claims 1 and 9 of the '771 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same general meaning in each claim. The parties dispute whether the phrase requires construction. [8]

---

[8] The parties' arguments for this disputed term can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 18-19); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 15); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 15); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 11-12).

IV argues that its construction is consistent with the PTAB's construction for this phrase. Dkt. No. 55 at 15 (citing Dkt. No. 55-6 at 12; Dkt. No. 55-7 at 10-11). IV contends that the PTAB found that "the routing system directs (*i.e.*, exchanges, routes, or communicates) data between networks citing to the '771 patent at 3:33-34 ('The LAN Router 16 directs traffic from the access point 12 to the Internet 20 via the fixed WAN interface 18.')" Dkt. No. 65 at 11-12 (citing Dkt. No. 55-7 at 10). IV argues that GM's argument that a routing system does not direct, exchange, route, or communicate data between a local area network and the Internet is incorrect.

GM responds that the claim language requires only "managing the data path" between a wireless access point and an internet access interface of the claimed mobile hotspot. GM contends that there is no requirement for directing data in the claims, much less directing data from the LAN all the way to the internet. The Court agrees with GM.

Although a routing system may direct, exchange, route, or communicate data between a local area network and the Internet, the claim language does not require it. Instead, the claims only recite "managing the data path" between a wireless access point and an internet access interface of the claimed mobile hotspot. Accordingly, the phrase "a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface" will be given its plain and ordinary meaning.

2. Court's Construction

For the reasons set forth above, the phrase **"a Local Area Network (LAN) routing system managing the data path between said wireless access point and said Internet access interface"** is given its **plain and ordinary meaning.**

b. "without the need to access an external service controller server"

Disputed Term	IV's Proposal	GM's Proposal
"without the need to access an external service controller server"	Plain and Ordinary meaning. Stand-alone system: "a system capable of operating independently of any other system."	"without the need to connect to an external server before enabling a client device to access the internet"

1. Analysis

The phrase "without the need to access an external service controller server" appears in Claim 1 the '771 Patent. The parties dispute whether the phrase requires construction. [9] The term "external service controller server" does not appear in the specification, and was added during prosecution. Specifically, the patentees added this negative limitation to distinguish the Kokkinen prior art publication. The patentees initially argued, without amending the claims, that Kokkinen required "a service control server 90 which accesses the Internet through a gateway 92 [and] [m]uch of the functionality is off-loaded on the service controller server." Dkt. No. 55-8 at 11. The patentees further distinguished their invention by arguing that their system was capable of "stand-alone operation unlike the system of Kokkinen." *Id.* at 12.

The examiner rejected the patentees' argument because "there [was] nothing in the claims about a stand-alone system nor has applicant negatively claimed an auxiliary server." Dkt. No. 55-9 at 6. The patentees amended the claims to include the "stand-alone" language, and added the negatively limitation regarding the external server. Dkt. No. 55-10 at 3, 6. Regarding the claim amendments, the patentees argued as follows:

> Applicant has a LAN router 16 that connects the wireless access
> point 12 to the Internet Access Interface 42 which in Figs. 1 to 4 is
> a long-range wireless Internet Interface or WAN. There is no service
> controller or auxiliary server required as in Kokkinen. Applicant's

---

[9] The parties' arguments for this disputed term can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 19-20); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 15-16); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 15-17); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 12-13).

system is, thus, capable of standalone operation unlike the system of Kokkinen. Claim 1 claims stand-alone operation as well as not having a requirement for an external server.

Dkt. No. 55-10 at 10. Thus, the claim language itself addressed the issues raised by the examiner. When the phrase "without the need to access an external service controller server" is read in the context of the entire claim, it is clear that this negative limitation further emphasizes that the "mobile wireless hot spot system" is a "stand-alone system." Indeed, GM argued in its brief that a "stand-alone system" does not connect to any external or auxiliary server in order to access the Internet. Dkt. No. 47 at 20.

GM argues that IV seeks to read the term "external service controller server" entirely out of the claim. The Court disagrees. It is GM, not IV, that is proposing a construction for the disputed phrase. The phrase is not read out of the claims if the Court rejects GM's construction. It is still in the claims, and as discussed above, further emphasizes that the "mobile wireless hot spot system" is a "stand-alone system." Moreover, GM attempts to read into the claims the additional limitation of "before enabling a client device to access the internet." GM failed to provide a persuasive reason to add this limitation, or redraft "access" to "connect." Accordingly, the Court rejects GM construction.

2. Court's Construction

For the reasons set forth above, the phrase **"without the need to access an external service controller server"** is given its **plain and ordinary meaning.**

C. '318 Patent

The '318 Patent, titled "Shared-Communications Channel Utilization for Applications Having Different Class of Service Requirements," issued on March 23, 2010, and was filed on March 7, 2003. The '318 Patent "relates to telecommunications in general, and, more particularly, to a technique for enabling the stations in a local area network to intelligently use their shared-

communications channel." '318 Patent at 1:17–20. The Abstract of the '318 Patent states:

> A technique is disclosed that enables latency-tolerant and latency-intolerant applications to intelligently share a shared communications channel in a manner that seeks to satisfy the needs of all of the applications. In particular, the illustrative embodiment enables each application to be associated with a different class of service, wherein each class of service is associated with one or more quality-of-service parameters (e.g., minimum throughput, maximum latency, etc.). The illustrative embodiment then effectively apportions access to the shared-communications channel by regulating different degrees of bursting (i.e., the transmission of multiple frames at a single transmission opportunity) based on the class of service associated with the application.

Claim 1 of the '318 Patent is an illustrative claim and recites the following elements (disputed terms in italics):

> 1.A method, comprising:
> queuing data frames to be transmitted during a transmitting station's *transmit opportunity*, wherein the data frames are queued in a queue, wherein the *transmit opportunity* corresponds to a length of time during which the transmitting station will transmit data frames from the queue to a shared-communications channel, and *wherein the transmit opportunity is commenced with a control frame*; and
> setting a length of time for the *transmit opportunity* based on a priority of the queue.

a. "transmit opportunity" and "wherein the transmit opportunity is commenced with a control frame"

Disputed Term	IV's Proposal	GM's Proposal
"transmit opportunity"	Not indefinite.	Indefinite.
"wherein the transmit opportunity is commenced with a control frame"	Not indefinite.	Indefinite.

1. Analysis

The term "transmit opportunity" appears in Claims 1-5 and 8-12 of the '318 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same general meaning in each claim. The phrase "wherein the transmit opportunity is commenced with a control

frame" appears in Claims 1 and 8 of the '318 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same general meaning in each claim. The parties dispute whether the term "transmit opportunity," and the longer phrase "wherein the transmit opportunity is commenced with a control frame" are indefinite. [10]

Wireless communication systems share the same bandwidth and Radio Frequency (RF) resources, thereby providing a "window" or "opportunity" to transmit. This concept is well understood by a POSITA. Indeed, in the Summary of the Invention section, the specification states that "[t]he present invention enables latency-tolerant and latency-intolerant applications to intelligently share a shared-communications channel in a manner that seeks to satisfy the needs of all of the applications." '318 Patent at 1:62–65. The claims themselves explain the term such that a POSITA would be informed "about the scope of the invention with reasonable certainty." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). For example, Claim 1 recites "frames to be transmitted during a transmitting station's *transmit opportunity*, wherein the data frames are queued in a queue, wherein the *transmit opportunity* corresponds to a length of time during which the transmitting station will transmit data frames from the queue to a shared-communications channel." '318 Patent at Claim 1 (emphasis added).

The specification provides further support by providing exemplary embodiments. For example, the specification states that "[a]n illustrative embodiment of the present invention comprises: queuing m frames in a queue; and transmitting a maximum of n frames of them frames into a shared-communications channel when presented with an opportunity to transmit all m

---

[10] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 21-23); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 16-19); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 17-18); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 13-15).

frames into the shared-communications channel; wherein m and n are positive integers and m>n."

Id. at 2:29–34. Likewise, Figure 3 ("opportunity to transmit") gives an example of a transmit

opportunity as used in a flow chart of an illustrative embodiment. *Id.* at Figure 3, 2:44–45.

Describing this embodiment, the specification describes an "opportunity to transmit:"

> At task 303, station 200 acquires, in well-known fashion, an *opportunity to transmit* one or more frames associated with application i. In accordance with the illustrative embodiment, this opportunity enables station 200 to transmit a burst of up to M frames over shared-communications channel, where M is a positive integer.

Id. at 3:34–39. (emphasis added). The file history is consistent with the specification. During

prosecution, the patentees pointed to paragraphs in the specification that describe a transmit

opportunity. Dkt. No. 55-14 at 9 ("For instance, transmit opportunities (TXOPs) are described in

the specification in the context of 802.11 (e.g., see paragraphs 0008, 0010, 0028])"). Each of these

paragraphs include the term "transmission opportunity." *See* '318 Patent at 2:3–7, 2:15–28, 3:40–

46. These examples inform a POSITA with reasonable certainty about the scope of the invention.

GM argues that the term transmit opportunity would not have an understanding in the art.

GM disregards the term in the context of the entire claim language, specification, and prosecution

history. The patentees' amendments were not replacing transmission for transmit. Dkt. No. 55-15

at 7 (emphasizing the entire limitation "***setting a length of the transmit opportunity based on a***

priority of the queue limitation" was not disclosed in the prior art).

GM also argues that "transmission opportunity" is not a transmit opportunity. As explained

in the examples above, the patentees used those terms interchangeably, and a POSITA would

understand that "transmit opportunity" is a shortened way of referring to an "opportunity to

transmit." Similarly, GM pulls the "corresponds" limitation of Claim 1 out of context, and argues

that particular limitation defines "transmit opportunity" in a different way than the specification.

GM also argues that Claims 1 and 8 are indefinite based on the longer phrase, "wherein

the transmit opportunity is commenced with a control frame." GM argues that if the following

statement in the prosecution history is adopted as the definition of "transmit opportunity," the

claims would be indefinite.

> It is noted from the specification and IEEE 802.11 (and the above-referenced patent numbers) that a "transmit opportunity" generally refers to the maximum amount of time a station can occupy a channel, each transmit time delineated by a start time and maximum duration.

Dkt. No. 47-47 at 131. The Court finds that the file history was not defining the term, but instead

was contrasting a time interval from allocated bandwidth duration. Specifically, the patentees

further argued that "[i]n other words, the channel is occupied by the station in *Aatresh* during an

overall bandwidth duration, and not limited by the segment of time to transmit the packets from a

given queue." *Id.* at 131.

The specification comports with this understanding. Indeed, in an exemplary embodiment,

the specification describes a time interval. '318 Patent at 3:64–66 ("processor 203 determines the

amount of time, T_i, that is to be afforded to the transmission of frames for queue"). Contrary to

GM's assertions, the specification indicates that a control frame can commence a time interval.

Figure 4 provides an example of an embodiment "wherein the transmit opportunity is commenced

with a control frame." *Id.* at Figure 4, 2:46–48, 5:4–33.

T_i = Amount of Time Needed to Successfully Transmit A Burst Comprising N_i Data Frames
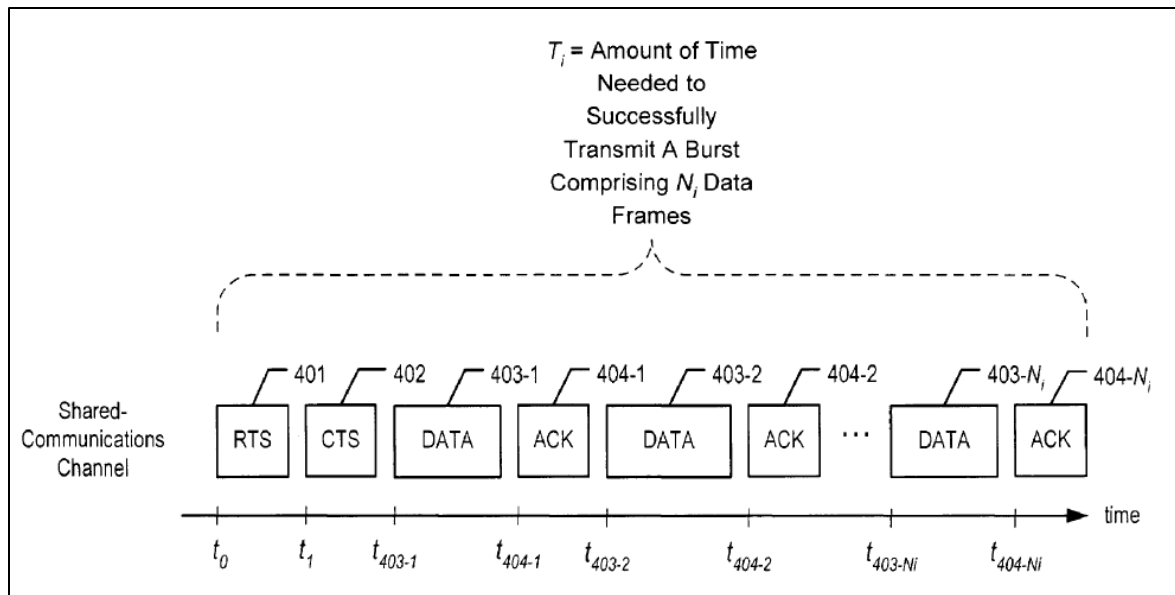
Id. at Figure 4. At the very beginning of this example, commencement occurs with a "Request to Send frame (RTS)" (*id.* at 5:11–12), which is an example of a control frame. *Id.* at 3:4–5 ("The frames include both data frames and control frames, such as request-to-send, clear-to-send, and acknowledgement frames."). Accordingly, GM failed to prove by clear and convincing evidence that the claims are indefinite.

2. Court's Construction

The Court finds that the term **"transmit opportunity,"** and the phrase **"wherein the transmit opportunity is commenced with a control frame"** are not indefinite, and are given their **plain and ordinary meaning**.

D. '004 Patent

The '004 Patent, titled "Method for Vehicle Internetworks," issued on February 15, 2011, and was filed on October 4, 2000. The '004 Patent "relates to providing distributed network and Internet access to processors, controls, and devices in vehicles." '004 Patent at 1:41–43. The Abstract of the '004 Patent states:

> Vehicle internetworks provide for communications among diverse
> electronic devices within a vehicle, and for communications among

these devices and networks external to the vehicle. The vehicle internetwork comprises specific devices, software, and protocols, and provides for security for essential vehicle functions and data communications, ease of integration of new devices and services to the vehicle internetwork, and ease of addition of services linking the vehicle to external networks such as the Internet.

Claim 68 of the '004 Patent is an illustrative claim and recites the following elements (disputed terms in italics):

> 68. A method for internetworking, comprising:
> coupling, at a gateway node, a plurality of network elements in a motor vehicle, the motor vehicle comprising the gateway node, a first vehicle bus configured to carry communications according to a first communication protocol, a second vehicle bus configured to carry communications according to a second communication protocol, and the plurality of network elements, wherein the plurality of network elements includes a first set of network elements connected to the first vehicle bus, and a second set of network elements connected to the second vehicle bus;
> *automatically forming a network of the plurality of network elements* in which the gateway node provides a bridge between the first vehicle bus and the second vehicle bus, wherein the bridge is operable to pass messages between the first vehicle bus and the second vehicle bus;
> coupling at least one network element of *the assembled plurality of network elements* to a remote computer located outside of the motor vehicle; and
> remotely controlling, at the remote computer, at least one function of *the assembled plurality of network elements.*

a. "automatically forming a network of the plurality of network elements"

Disputed Term	IV's Proposal	GM's Proposal
"automatically forming a network of the plurality of network elements"	Plain and ordinary meaning.	"automatically assembling and configuring the plurality of network elements to communicate with one another"

1. Analysis

The phrase "automatically forming a network of the plurality of network elements" appears in Claim 68 of the '004 Patent. The parties dispute whether "forming" should be construed to mean

"assembling and configuring." [11] The prosecution history indicates that "forming" should be construed to mean "assembling." After the claims were allowed (Dkt. No. 55-18 at 22, Mar. 24, 2010 Notice of Allowance), the patentees requested what they characterized as "a minor non-narrowing amendment" that included the disputed claim language. As shown below, the amendment replaced "assembling" with "forming."

---

[11] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 24-26); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 20-22); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 18-20); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 15-16).

77. (Currently Amended) A method for internetworking, comprising:

coupling, at a gateway node, a plurality of network elements in a motor vehicle, the motor vehicle comprising the [[a]] gateway node, a first vehicle bus configured to carry that carries communications according to a first communication protocol, a second vehicle bus configured to carry that carries communications according to a second communication protocol, and the [[a]] plurality of network elements, wherein the plurality of network elements includes a first set of network elements connected to the first vehicle bus, and a second set of network elements connected to the second vehicle bus, the gateway node coupling the plurality of network elements in the motor vehicle;

the plurality of network elements automatically assembling to form forming a network of the plurality of network elements in which the gateway node provides a bridge between the first vehicle bus and the second vehicle bus, wherein the bridge is operable to pass messages between the first vehicle bus and the second vehicle bus;

coupling at least one network element of the assembled plurality of network elements coupling to a remote computer located outside of the motor vehicle; and

the remote computer remotely controlling, at the remote computer, at least one function of the assembled plurality of network elements.

Dkt. No. 55-18 at 19 (highlight added). The examiner allowed the minor amendments without objection, indicating that the examiner understood the terms as interchangeable. Consistent with this understanding, the specification describes "automatically assembling" a network. *See, e.g.,* '004 Patent at 7:14–16 ("The network self-assembles, both with respect to establishment of the physical connectivity and in assembling applications."), 8:35–39 ("Among the advantages of the invention in enabling this broad range of vehicle reliability and consumer services are: its self-assembly and authentication from physical layer through to applications"), 23:57–60 ("By contrast, the WINS vehicle internetwork enables complete self-assembly of a network and its

applications, including coupling to services in outside networks."), 28:46–50 (" The system 2200

provides self-assembling components that form a wireless network among vehicles 2202 and local

sites 2204, which can, for example, be located in a residence, service station, maintenance shop,

or parking lot."). Accordingly, the Court construe "forming" to mean "assembling."

The Court also rejects the remainder of GM's construction, because it imports a

"configuring" limitation. The patentees used different language in Claim 68 than that of Claim 1.

Claim 1 requires the claim language "automatically assembling and configuring," which indicates

that the claims have a different meaning. *See e.g., Takeda Pharm. Co. v. Zydus Pharms. USA, Inc.*,

743 F.3d 1359, 1365 (Fed. Cir. 2014) (finding use of different language indicating different

meaning). GM argues that forming is synonymous with assembling, but seeks to define forming

in the claim as assembling *and configuring*. It is improper to take a limitation from one claim and

import it to another. GM also does not provide a persuasive reason to read "to communicate with

one another" into the Claim 68. Accordingly, the Court rejects this portion of GM's construction.

2. Court's Construction

For the reasons set forth above, the Court construes the phrase **"automatically forming a**

network of the plurality of network elements" to mean **"automatically assembling a network**

of the plurality of network elements."

b. "the assembled plurality of network elements"

Disputed Term	IV's Proposal	GM's Proposal
"the assembled plurality of network elements"	Plain and ordinary meaning. Not indefinite.	Indefinite.

1. Analysis

The phrase "the assembled plurality of network elements" appears in Claim 68 of the '004

Patent. The parties dispute whether the term "the assembled plurality of network elements" lacks

antecedent basis.[12]

GM argues that the term "*the* assembled plurality of network elements" appears twice in Claim 68 of the '004 Patent, each time without antecedent basis. GM contends that there are multiple groups of network elements including: "a first set of network elements connected to the first vehicle bus;" "a second set of network elements connected to the second vehicle bus;" and the combined "plurality of network elements." According to GM, a POSITA would have understood that "automatically forming a network of the plurality of network elements" required at least "automatically assembling the plurality of network elements" or the claim is indefinite.

The Court agrees that a POSITA would have understood that "automatically forming a network of the plurality of network elements" to mean "automatically assembling a network of the plurality of network elements." This is the Court's construction for the previous term. This construction resolves the indefinite argument, because it provides antecedent basis for "the assembled plurality of network elements," as shown below:

> automatically *[assembling] a network of the plurality of network elements* in which the gateway node provides a bridge between the first vehicle bus and the second vehicle bus, wherein the bridge is operable to pass messages between the first vehicle bus and the second vehicle bus;
> coupling at least one network element of *the assembled plurality of network elements* to a remote computer located outside of the motor vehicle; and
> remotely controlling, at the remote computer, at least one function of *the assembled plurality of network elements*.

'004 Patent at Claim 68 (emphasis added). Reading the claim in context, "the assembled plurality of network elements" refers back to the network assembled earlier in the claim.

---

[12] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 26); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 22-23); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 18-20); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 16-17).

GM attempts to interject confusion into the claim by arguing that the "assembled plurality of network elements" could refer to any instance that the claim recites "network elements." This is inconsistent with the claim because the term requires the elements to be *assembled*. As explained above, there is only one instance where the elements are assembled. As such it would be clear to a POSITA that the term does not refer to any group of network elements, but would only refer to the assembled network. Accordingly, GM failed to prove by clear and convincing evidence that Claim 68 is indefinite.

2. Court's Construction

The phrase **"the assembled plurality of network elements"** is not indefinite, and is given its **plain and ordinary meaning**.

E. '356 Patent

The '356 Patent, titled "Communications in a Wireless Network," issued on August 19, 2014, and was filed on July 5, 2011. The '356 Patent relates to "a new technique for uplink channel control that uses a feedback scheme as a substitute for the absence of channel reciprocity, with minimal impact on the ability of the air interface to support uplink shared channels" '356 Patent at 2:12–16. The Abstract of the '356 Patent states:

> Receiving resource allocation information associated with an uplink physical control channel is disclosed. The uplink physical control channel and a physical uplink shared channel may have different resources. Data may be sent over the physical uplink shared channel in assigned time intervals. A signal may be sent over the uplink physical control channel based on the received resource allocation information in a time interval that the UE is not sending data over the physical uplink shared channel.

Claim 1 of the '356 Patent is an illustrative claim and recites the following elements (disputed terms in italics):

> 1.A user equipment (UE) comprising:

a processor configured to receive resource allocation information
    associated with an uplink physical control channel, wherein
    the uplink physical control channel and a physical uplink
    shared channel have different resources;
the processor is further configured to send data over the physical
    uplink shared channel in assigned time intervals;
the processor is further configured, in a time interval that it is not
    sending information over the physical uplink shared channel,
    to send a signal over the uplink physical control channel based
    on the received resource allocation information; and
*the processor is further configured to receive feedback information
    from a downlink control channel.*

    **a. "the processor is further configured to receive feedback information from
a downlink control channel"/ "receiving, by the UE, feedback
information from a downlink control channel"**

Disputed Term	IV's Proposal	GM's Proposal
"the processor is further configured to receive feedback information from a downlink control channel"/ "receiving, by the UE, feedback information from a downlink control channel"	Plain and ordinary meaning.	"the processor is further configured to receive information in response to the signal sent over the uplink physical control channel from a downlink control channel"/"receiving, by the UE, information in response to the signal sent over the uplink physical control channel from a downlink control channel"

    1. Analysis

The phrase "the processor is further configured to receive feedback information from a downlink control channel" appears in Claim 1 of the '356 Patent. The phrase "receiving, by the UE, feedback information from a downlink control channel" appears in Claim 22 of the '356 Patent. The parties dispute whether the term "feedback information" requires construction.[13]

---

[13] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 27-28); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 25-26); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 20-21); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 17-18).

The '356 Patent discloses "a new technique for uplink channel control that uses a feedback scheme as a substitute for the absence of channel reciprocity." '356 Patent at 2:12–15. As described in the background section of the specification, "[c]hannel reciprocity give equipment the ability to derive information about uplink channel conditions from downlink channel conditions based on signals received by the user equipment (UE)." *Id.* at 1:23–26. However, this information is not always available because channel reciprocity cannot be guaranteed.

The specification addresses this specific issue by establishing an "active feedback control" between a base station and user equipment (UE). *Id.* at 2:16–17. The specification states that this is accomplished by a system whereby "a UE allocates a time slot for a beacon signal separated from the time slots for data in a frame. A second time slot is allocated within the frame for the base station to transmit a control signal in response to the beacon signal. The control signal instructs the UE to adjust a transmission parameter." *Id.* at 2:29–34, *see also, id.* at 4:35–40 (When pathloss reciprocity is not available, the combination of an uplink physical channel control signal with a downlink feedback channel may be used to keep the terminal informed of the condition of the uplink channel. The uplink physical control signal is referred to herein as an 'Uplink Beacon' (UL_Beacon)."). Accordingly, a POSITA would understand that "feedback information" in the claims refers to information received in response to the signal sent over the uplink control channel from a downlink control channel.

In particular, the specification states the following regarding the feedback information:

> Embodiments of the invention allow a terminal to transmit the uplink physical channel control signal (UL_Beacon) independently from the uplink physical channel. *Therefore, the implementation of closed loop feedback may operate in the absence of an uplink physical channel.*
> ('356 Patent at 2:24–28) (emphasis added)
>
> *A UL Beacon signal may be combined with a physical layer common*

> *control channel (PLCCH) to form a feedback system. . . .* The
> PLCCH carries feedback information to the UEs that are
> transmitting UL Beacon signals.
> (*Id.* at 2:36–46) (emphasis added)

> When pathloss reciprocity is not available, *the combination of an*
> *uplink physical channel control signal with a downlink feedback*
> *channel* may be used to keep the terminal informed of the condition
> of the uplink channel. The uplink physical control signal is referred
> to herein as an "Uplink Beacon" (UL_Beacon).
> (*Id.* at 4:35–40) (emphasis added)

> The system may implement a closed loop control system, in which
> *the base station detects the received power and/or other channel*
> *information from the ULBeacon, and send controlling commands*
> *back to each terminal to keep the terminal informed of the channel*
> *conditions observed in the base station.*
> (*Id.* at 4:55–60) (emphasis added).

As indicated, the feedback information is received in Physical Layer Control Channel

(PLCCH) (*i.e.*, the claimed "to receive feedback information from a downlink control channel")

by the UE in response to sending the uplink physical channel control signal (UL_Beacon) (*i.e.*, the

claimed "to send a signal over the uplink physical control channel") by the UE. The only feedback

information that the specification discloses is the PLCCH signal received by the UE in response

to sending a control signal (*i.e.*, UL-Beacon) over the uplink physical control channel. *Id.*

IV argues that it is improper to import limitations from the specification into the claims

without a clear and unmistakable disclaimer. IV also contends that GM relies on exemplary

embodiments to limit the scope of the claims. IV further argues that GM's construction reads out

other embodiments specifically contemplated by the patent.

The Court disagrees with IV. Both Claim 1 and 22 recite sending a signal over *the uplink*

physical control channel based on the received resource allocation information. IV does not

explain what embodiments are excluded or how they could include "feedback" information if there

is no uplink signal to respond to, which is the only disclosed embodiment. Accordingly, the Court

construe "feedback information" to mean "information in response to the signal sent over the uplink physical control channel."

2. Court's Construction

For the reasons set forth above, the Court construes the term **"feedback information"** to mean **"information in response to the signal sent over the uplink physical control channel."**

F. '158 Patent

The '158 Patent, titled "Large Dynamic Range Cameras," issued on January 5, 2016, and was filed on October 25, 2013. The '158 Patent "relates generally to optical devices and more particularly to expanding the dynamic exposure range in digital cameras." '158 Patent at 1:26–28. The Abstract of the '158 Patent states:

> A digital camera includes a plurality of channels and a processing component operatively coupled to the plurality of channels. Each channel of the plurality of channels includes an optics component and a sensor that includes an array of photo-detectors. The processing component is configured to separately control an integration time of each channel, where a first integration time of a first channel is less than a second integration time of a second channel. The processing component is also configured to combine data from the plurality of channels to generate an image.

Claim 1 of the '158 Patent is an illustrative claim and recites the following elements (disputed terms in italics):

> 1.*An image capture device* comprising:
> a plurality of sensors;
> a plurality of optics components, wherein each optics component of
>   the plurality of optics components is configured to pass light
>   to a sensor of the plurality of sensors; and
> *a processing component configured to control an integration time
>   of each sensor.*

a. "integration time"

Disputed Term	IV's Proposal	GM's Proposal
"integration time"	Plain and ordinary meaning, no construction necessary not indefinite.	"the time the image sensor collects and integrates signal from the scene" or "the time electrical charge is stored or accumulated when a sensor is exposed to light"

1.   Analysis

The term "integration time" appears in Claims 1-3, 7-9, and 11-16 of the '158 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same general meaning in each claim. The parties dispute whether the term "integration time" requires construction.[14] The specification "relates generally to optical devices and more particularly to expanding the dynamic exposure range in digital cameras." '158 Patent at 1:26–28. The specification describes and claims a digital camera device that uses multiple optical components and associated sensors (*e.g.*, cameras) to capture portions of the same image using different exposure times (integration times). *Id.* at Abstract.

---

[14] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 29-30); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 26-28); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 21-22); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 18-20).

FIG.3
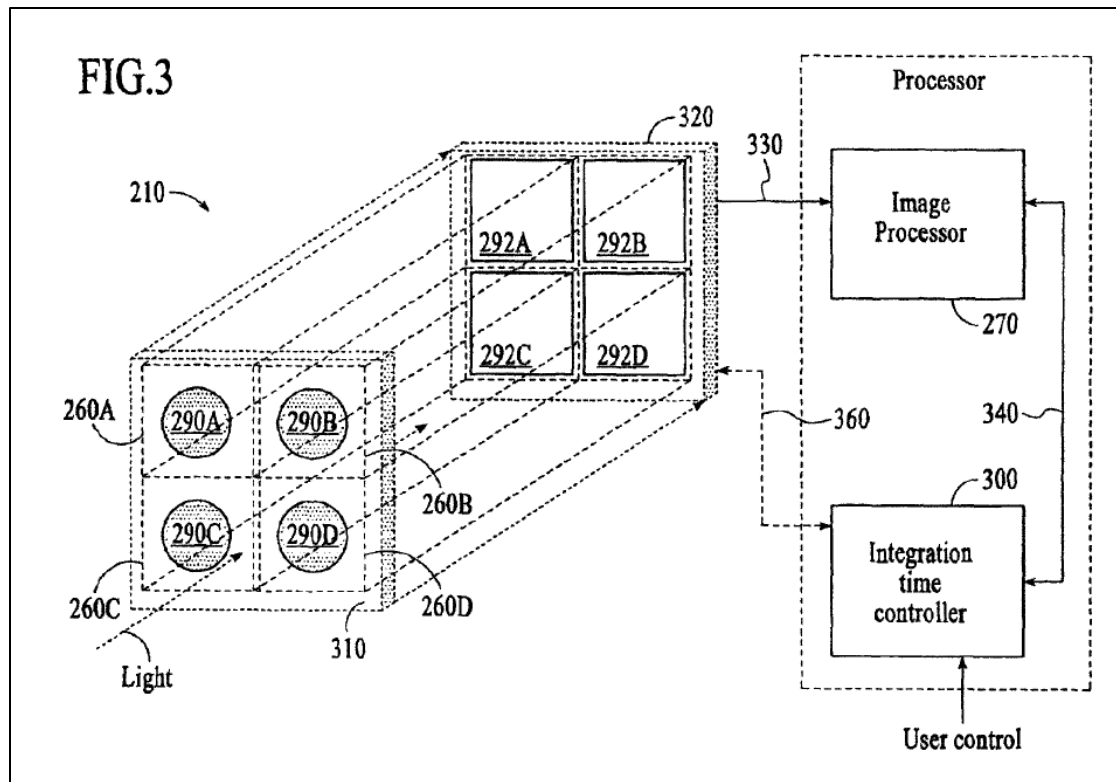
Id. at Figure 3. The images are then combined into a single image of the object. *Id.* at 8:63–9:8. By using images that have different integration times, the exposure of the combined image is expanded, and underexposed and overexposed areas are reduced. *Id.* at 9:7–8.

Contrary to IV's contention, the specification explicitly defines "integration time" as follows: "The amount of integrated photo-charge is directly related *to the time the image sensor collects and integrates signal from the scene. This is known as integration time*." *Id.* at 4:3–6 (emphasis added). The '158 Patent includes claims that refer to the "integration time" of multiple sensors and also to combining data from multiple sensors to form a single image, sometimes within the same claim. *See, e.g., id.* at Claim 9 ("wherein the processing component is configured to determine an integration time of each channel" and "wherein the processing component is configured to combine data from the plurality of channels received to provide an image"). Thus, the Court provides a construction of "integration time" to clarify that the term refers to "the time

the image sensor collects and integrates signal from the scene."

IV argues that the specification does not provide an explicit and unequivocal definition of the term "integration time." According to IV, the specification references, but does not define integration time as "the time the image sensor collects and integrates signal from the scene." Dkt. No. 55 at 26 (citing '158 Patent at 4:3–6). IV contends that the term "integration time" refers to a "sampling method to make adjustments 'to create optimal pictures,'" and includes setting the integration time before the sensor collects and integrates signal, as well as combining the output of multiple sensors after each sensor has collected signal. As discussed above, the specification indicates that the integration time refers to the time each sensor collects and integrates signal from the scene.

2. Court's Construction

For the reasons set forth above, the Court construes the term **"integration time"** to mean **"the time the image sensor collects and integrates signal from the scene."**

b. "an image capture device"

Disputed Term	IV's Proposal	GM's Proposal
"an image capture device"	Plain and ordinary meaning.	"a device with multiple sensors that each capture a portion of the same image"

1. Analysis

The term "an image capture device" appears in Claim 1 of the '158 Patent. The parties dispute whether the term requires construction.[15] The specification emphasizes that the invention relates to expanding the dynamic exposure range in digital cameras, and distinguishes prior art

---

[15] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 31-33); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 28-29); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 22-24); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 20-21).

devices that use a single sensor to capture a single-frame image. The "Technical Field" description states that "the following disclosure relates generally to optical devices and more particularly to expanding the dynamic exposure range in digital cameras." '158 Patent at 1:26–28. The "Background" section explains that the "dynamic exposure range" refers to the range of light that can be accommodated by an image sensor in a single frame of data. *Id.* at 1:43–45. The specification further explains that the range of a single sensor is limited, and the dynamic range of scenes with highly varying illumination have significantly greater dynamic ranges. *Id.* This section concludes by stating that "*there is a need for a digital camera in which the effective single-frame dynamic exposure range is expanded.*" *Id.* at 2:40–42 (emphasis added).

The specification purports to solve this "need" by using multiple sensors to image the scene at different integration times. The specification states that "[d]igital camera systems and methods are described below that provide an expanded effective single-frame dynamic exposure range." *Id.* at 3:39–41. The "digital camera systems and methods…generally include two or more camera channels" and "[e]ach channel includes an optics component and an image sensor." *Id.* at 3:41–45. The specification refers to "image capture" by a digital camera "using multiple camera channels" with each channel controlled during a single frame under an independent integration time. *Id.* at 3:47–50.

A POSITA would understand from the disclosure that using multiple sensors with different integration times is critical to expanding the exposure range of a single-frame. In order to obtain a single-frame image with an expanded dynamic range, at least some of the sensors must image at least an overlapping portion of the same scene using a different integration time. Otherwise, the device would operate like a single scene using a single sensor that has a limited dynamic range, which is the prior art criticized by the patentee. *See, e.g., MPHJ Tech. Invs., LLC v. Ricoh Ams.*

Corp., 847 F.3d 1363, 1377 (Fed. Cir. 2017) ("When the specification distinguishes the prior art, the invention should not be construed to encompass the prior art features."). Accordingly, the Court will construe "an image capture device" to mean "a device including a plurality of sensors, where two or more of the plurality of sensors each capture an overlapping portion of the same scene."

IV argues that the claims already include language that confirms that multiple sensors are used. IV further contends that the specification does not limit the term image capture device to one using "different" integration times. IV also argues that the specification explains that for some embodiments, the processor may generate a combined imaged based, at least in part, on the images from two or more optical channels.

The Court agrees with IV that the claims do not require that all of the plurality of sensors be required to capture the exact same image. '158 Patent at 17:22–24 ("In some other embodiments, the processor may generate a combined image based, at least in part, on the images from two or more of such optical channels."). Instead, at least two or more of the plurality of sensors must each capture an overlapping portion of the same scene. However, the Court disagrees with IV's argument that the specification does not limit the image capture device to one using "different" integration times, or that none of the sensors have to point in the same direction. This argument is directly contradicted by the specification:

> The digital cameras described herein overcome this dynamic range limitation through the use of multiple camera channels, including multiple optics and image sensors on a single integrated circuit (IC) or semiconductor substrate. The multiple camera channels are *configured to image the same field of view simultaneously*, and *each operates independently under a different integration time*.

Id. at 4:18–24 (emphasis added). Accordingly, the Court rejects this portions of IV's argument.

2.   Court's Construction

For the reasons set forth above, the Court construes the term **"an image capture device"**

to mean **"a device including a plurality of sensors, where two or more of the plurality of**

sensors each capture an overlapping portion of the same scene."

c.   "an interface … configured to receive the integration time of each sensor as an input to an image capture device"

Disputed Term	IV's Proposal	GM's Proposal
"an interface … configured to receive the integration time of each sensor as an input to an image capture device"	Plain and ordinary meaning.	"a user device or connection external to the image capture device that allows the user to input the integration time of each sensor"

1.   Analysis

The phrase "an interface … configured to receive the integration time of each sensor as an

input to an image capture device" appears in Claim 3 of the '158 Patent. The parties dispute

whether the phrase requires construction.[16] GM argues that to provide an "input to" the image

capture device, the "interface" must necessarily be external to the image capture device. GM

contends that as a matter of plain English, an interface cannot provide an "input to" another object

when it is already inside or part of that object. GM also contends that Figure 1 describes a

conventional digital camera that includes an "interface" 132—an external shutter button that can

be depressed by the user. Dkt. No. 47 at 34 (citing '158 Patent at 5:51–6:2, Figure 1). GM argues

that the external user interface is described as an "input device." Dkt. No. 47 at 34 (citing '158

Patent at 6:37–42, 7:4–9, 11:46–54; 12:28–37). Finally, GM contends that Figures 3-6 illustrate a

---

[16] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 33-34); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 29-30); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 24); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 21-22).

"user control" external to the digital camera subsystem.

IV responds that there is no portion of the specification that defines the term "interface" as a "user device or connection external to the image capture device." IV argues that the specification describes "interface" to be an input/output to a component consistent with Figure 15.

FIG.15
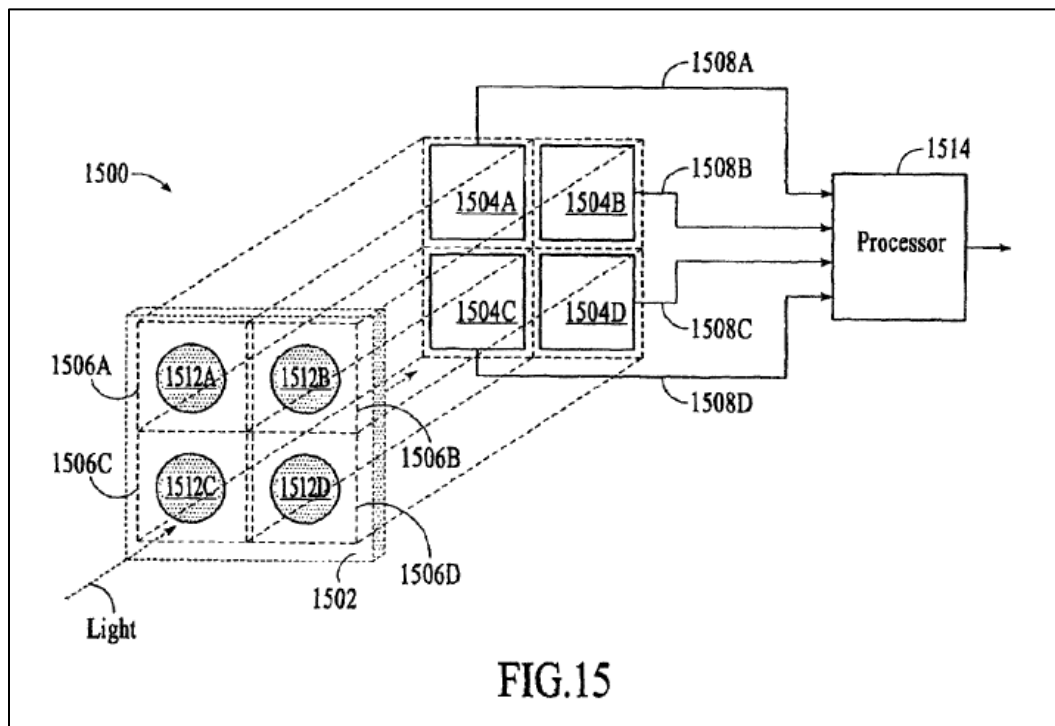
'158 Patent at Figure 15. IV points to the specification, which states that "[i]n this embodiment, the image post processor includes an encoder and an output interface … [t]he output of the encoder is supplied to the output interface, which provides encoding to supply an output signal … and a serial interface." '158 Patent at 22:53–23:10. IV contends there is no clear and unmistakable disclaimer that would require the interface to be outside of the image capture device as GM argues.

The Court agrees with IV. There is no portion of the specification that defines the term "interface" as a "user device or connection external to the image capture device." GM's argument assumes that the image capture device must be a digital camera. This is incorrect given that the specification includes other applications including video, security, and automotive applications.

'158 Patent at 15:12–24. Moreover, the claim language indicates that the "interface" is included in the "image capture device," and that it is "operatively coupled" to the processing component. *See, e.g., id.* at Claim 3. Therefore, the claim language itself indicates that the "interface" is not "external to" the "image capture device." Accordingly, the Court rejects GM's construction.

2. Court's Construction

For the reasons set forth above, the phrase **"an interface … configured to receive the integration time of each sensor as an input to an image capture device"** is given its **plain and ordinary meaning.**

G. '475 Patent

The '475 Patent, titled "Device, System and Method for Controlling Speed of a Vehicle Using a Positional Information Device" issued on March 22, 2016, and was filed on February 10, 2015. The '475 Patent "relates generally to navigational or positional information systems, and more particularly, to devices, systems, and methods for controlling a speed of a vehicle using a positional information device, e.g., a global positioning system (GPS) device." '475 Patent at 1:23–27. The Abstract of the '475 Patent states:

> A device, system and method for controlling speed of a vehicle are provided. The device includes a locational information module for determining location information and speed; a storage module for storing at least one geographic map including at least one route and a speed limit for the at least one route; a processing module configured to receive the location information, retrieve at least one geographic map based on the location information, determine a speed limit based on the location information, and compare the speed of the device to the determined speed limit; and a display module for alerting a user if the speed of the device exceeds the determined speed limit. The system and method can be for communicating a subject vehicle's speed to a central server where it can be utilized to analyze traffic congestion patterns or notify selected companies or individuals.

Claim 1 of the '475 Patent is an illustrative claim and recites the following elements

(disputed terms in italics):

> 1. A method of notifying a recipient of a *violation* by a driver of a vehicle, the method comprising:
>
> determining, by a computing device located within a vehicle, information about the vehicle;
>
> determining, by the computing device located within the vehicle, that the vehicle committed a *violation* based on the information about the vehicle; and
>
> sending, from the computing device located in the vehicle to a remote computing system, an indication of the *violation*;
>
> wherein the remote computing device is configured to notify a recipient about the *violation* committed by the vehicle.

a. "violation"

Disputed Term	IV's Proposal	GM's Proposal
"violation"	Plain and ordinary meaning.	"non-compliance with a traffic law concerning vehicle speed"

1. Analysis

The term "violation" appears in Claims 1-2, 4-8, 11-15, and 19-20 of the '475 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same general meaning in each claim The parties dispute whether the term requires construction.[17] The '475 Patent is titled "Device, system and method for controlling speed of a vehicle using a positional information device." The specification states that even though GPS devices are everywhere "[i]t is quite common for a driver to be unaware that he was violating the speed limit" because "speed limits change quite rapidly." '475 Patent at 1:51–53. The specification addresses this problem by proposing "a device, system and method for controlling the speed of a vehicle" by enabling "a position information device, e.g., a GPS (global position system) unit, to alert a user if they are

---

[17] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 34-36); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 30-31); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 24-25); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 22-23).

violating a local speeding limit." *Id.* at 2:16–18; *see also* Figure 3.

GM argues that the applicant "clearly and unmistakably defined 'violation' based on the abstract, technical field and summary of the invention based on the use of the term 'present disclosure.'" Dkt. No. 47 at 35. The Court disagrees that the patentee defined "violation" as GM proposes. Contrary to GM's contention, there was no clear and unmistakable disclaimer made with regards to the term "violation." The Court generally agrees with IV that a POSITA will know that a violation is exceeding a limit value, in this case speed as shown in Figure 3 element 314 and 316. Indeed, Claim 3 limits the term violation to "a speed of the vehicle exceeding a posted speed limit:"

> The method of claim 1, wherein the *violation* committed by the vehicle comprises *a speed of the vehicle exceeding a posted speed limit*.

'475 Patent at Claim 3. Claim 1 does not use the term "speed," but uses the term "violation." *See* '475 Patent at claim 1. *Baxalta Inc. v. Genentech, Inc.*, 972 F.3d 1341, 1346 (Fed. Cir. 2020) ("The plain language of these dependent claims weighs heavily in favor of adopting Baxalta's broader claim construction."). Thus, the patentee did not describe the features of the present invention as a whole, and did not limit "violation" as GM proposes. To be sure, GM initially proposed a construction that did not include speed at all. Accordingly, there is no clear and unmistakable disclaimer or definition for this term.

2. Court's Construction

For the reasons set forth above, the term **"violation"** is given its **plain and ordinary meaning.**

H. '608 Patent

The '608 Patent, titled "System and Method for Notifying a User of People, Places or Things Having Attributes Matching a User's Stated Preference" issued on March 21, 2017, and was filed on January 27, 2014. The '608 Patent "relates generally to the field of communications

systems and, in particular, to a system and method for providing localized resource information to

mobile customers based on their explicit preferences that match profiles of media content about

people, places and things." '608 Patent at 1:25–30. The Abstract of the '608 Patent states:

> A location-based and preference-based system and method for matching media content about persons, places and things with the expressed preferences of mobile users to notify users about and provide users with access to media content about persons, places and things that match the user's expressed preferences. The system thus provides information such as stories or articles that match the user's interests and relate to their location. The system may assign ranks to all of the media content that meets that user's preferences wherein, in one embodiment, it will automatically play them in the assigned order. Comparison of the user's preferences with the various profiles of the media content allows the user only to be informed of the media content for those persons, places or things that the user is likely to be interested in. The system and method thus provides for a mobile real-time point of interest exchange network.

Claim 1 of the '608 Patent is an illustrative claim and recites the following elements

(disputed terms in italics):

> 1.A electronic computer implemented method for matching users with information, comprising:
> receiving a *first user preference*, a location of a mobile device of the first user, and *a geographic area limitation*;
> storing, for a plurality of objects, a set of attributes of each corresponding object, and a location of the corresponding object;
> determining an object of the plurality of objects that matches the first user based on at least:
> (a) the set of attributes for the object satisfies the *first user preference*, and
> (b) the distance between the received location of the mobile device of the first user and the object is within the geographic area limitation;
> sending to the first user, in response to a positive outcome of the determining, information about the matching object; and
> wherein the matching object is a person, place and/or thing.

a. "first user preference"

Disputed Term	IV's Proposal	GM's Proposal
"first user preference"	**Original Construction:** Plain and ordinary meaning which means "previously saved preference information." **Alternative Construction:** previously saved user preference information.	"user's previously saved preference information"

1. Analysis

The term "first user preference" appears in Claims 1-8 and 10-14 of the '608 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same general meaning in each claim. It is unclear if the partis' have a substantive dispute.[18] In its reply brief, GM proposes "that the Court adopt IV's construction with a slight tweak to make clear that the previously saved preference information is the user's previously saved preference information." Dkt. No. 56 at 26. IV responds that "GM's new construction appears to require an additional limitation where the previously saved preference information has to come from a specific user and not merely any user of the vehicle." Dkt. No. 65 at 23. IV further argues that "there is no requirement that the first user must be a specific user with a specific user profile in the '608 patent specification." *Id.* It appears that IV is reading too much into GM's alternative construction. Notwithstanding, the Court adopts IV's construction because it appears to resolve the parties' dispute.

2. Court's Construction

For the reasons set forth above, the Court construes the term **"first user preference"** to mean **"previously saved user preference information."**

---

[18] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 37-39); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 31-32); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 25-26); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 23).

b. "a geographic area limitation"

Disputed Term	IV's Proposal	GM's Proposal
"a geographic area limitation"	Plain and ordinary meaning.	"a geographic area supplied by a user for limiting the search for matching objects"

1. Analysis

The term "a geographic area limitation" appears in Claims 1, 2, 5, 8, 9, and 12 of the '608 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same general meaning in each claim. The parties dispute whether the term "a geographic area limitation" requires construction.[19] The specification describes the "present invention" as an improvement over prior art systems. The specification states that these systems provided general interest information to users about people, places or things based only on the location of the mobile traveler (*e.g.*, GPS) or systems that inferred user preferences "based on prior behavior or patterns of behavior, rather than explicitly asking the user for preferences," to provide specific content (*e.g.*, targeted advertising). '608 Patent at 2:61–64.

The specification further states that "none of these location-based information providers are believed to specifically tailor such attribute-based and location-based information to the specific expressed profile or preferences of the mobile traveler that will receive such information." *Id.* at 2:42–46. The specification purports to disclose "a dual-preference matching system and method that provides a system that is both location-based and preference-based to allow for a user to obtain information about those persons, places and things that match the user's preferences and are within a prescribed range." *Id.* at 3:32–37. The specification further states the following:

The *present invention* is an improvement over conventional means

---

[19] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 39-40); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 32-34); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 26-27); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 23-24).

> for providing information to users in that the system and method for providing information, which is accessible by the user, based on a location-based *and preference-based system that matches the specific expressed interests and preferences of a user* with the profile of a person, place or thing is unique and an improvement over the prior art…. In operation, *a user will create a preference portfolio* for various types of persons, places and/or things preferably through the use of a wireless device … *The preferences may include additional information such as: a distance range from the user, price, period of interest and the like…*

Id. at 3:41–64 (emphasis added), *see also* 8:22–34 ("The system and method of the present invention thereby allows users to indicate their preferences….[e]xamples of parameters that may be used include…the maximum distance that the user is willing to travel"), 14:55–59 ("when others come within their selected geography distance to the particular site"), Figure 3 and 4A (user preference profile including "distance" preference (e.g., within 10 miles)). Thus, in contrast to prior art systems, the disclosed invention allows users to be notified and provided information of persons, places or things that expressly match a user's explicit preferences and are within a user's prescribed geographic area.

The disputed phrase "a geographic area limitation" does not appear anywhere in the specification. However, as discussed above, the specification indicates that a POSITA would understand "a geographic area limitation" to mean "a geographic area supplied by a user." Unlike the prior art system that did not tailor "location-based information to the specific expressed profile or preferences of the mobile traveler," the claimed "geographic area limitation" is supplied by a user.

The Court does not adopt GM's proposal of "limiting the search for matching objects," because it is already a step in the claim. Specifically, Claim 1 requires "determining an object of the plurality of objects that matches the first user … and the object is within the geographic area limitation." Furthermore, determining matching objects is included in dependent Claims 5 and 7,

which recite "wherein the geographic area limitation is a distance from the mobile device of the

first user, or a geometric shape centered on the mobile device of the first user … wherein

determining further comprises identifying a plurality of matching objects, and the sending sends

information about the plurality of matching objects." It would be improper to read these limitations

into the independent claims to the extent that GM contends that the search is not already limited

by the language of Claim 1, but is captured by the language of the dependent claims, *Env't Designs,*

Ltd. v. Union Oil Co. of California, 713 F.2d 693, 699 (Fed. Cir. 1983) ("It is improper for courts

to read into an independent claim a limitation explicitly set forth in another claim"). Accordingly,

the Court rejects this portion of GM's construction.

2. Court's Construction

For the reasons set forth above, the Court construes the term **"a geographic area

limitation"** to mean **"a geographic area supplied by a user."**

c. "substantially real-time updates"

Disputed Term	IV's Proposal	GM's Proposal
"substantially real-time updates"	Plain and ordinary meaning. Not indefinite.	Indefinite.

1. Analysis

The term "substantially real-time updates" appears in Claims 3 and 10 of the '608 Patent.

The Court finds that the term is used consistently in the claims and is intended to have the same

general meaning in each claim. The parties dispute whether the term "substantially real-time

updates" is indefinite. [20]

---

[20] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim
Construction Brief (Dkt. No. 47 at 41-42); Plaintiff's Responsive Claim Construction Brief (Dkt.
No. 55 at 34-36); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 27-28); and
Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 24-25).

GM argues that the term "receiving substantially real-time updates" is purely subjective and neither the claims nor the specification provides any objective standard for ascertaining the scope of this term. GM contends that a POSITA would view this claim language as subjective because what might be considered substantially in real time to one POSITA may not be considered substantially in real-time to another. GM also argues that the specification provides no standard for assessing when an update is received substantially in real-time. According to GM, the specification does not use the term "real-time" to refer to receiving updates of the location of the mobile device. GM further contends that the specification do not use the term "substantially," or any term of approximation or degree, in connection with the term "real-time."

IV responds that POSITA will know that an update cannot be real-time, because GPS requires communication with satellites. IV argues that there is a delay based on the time it takes to send/receive signals and based on the position of the satellite along with delays in processing the information through queues, delays, etc. Accordingly, IV argues that the term is not "purely subjective." The Court agrees with IV.

A number of courts have determined that the term "substantially real-time" is not indefinite. *Call Wave Communs., LLC v. AT&T Mobility, LLC*, Civil Action No. 12-1701-RGA, 2015 U.S. Dist. LEXIS 71585, at *26 (D. Del. June 3, 2015) (finding no construction necessary for "substantially real time"); *EdiSync Sys., LLC v. Adobe Sys.*, Civil Action No. 12-cv-02231-MSK-MEH, 2017 U.S. Dist. LEXIS 93406, at *30 (D. Colo. June 16, 2017) (finding "substantially real-time" not indefinite); *Foundry Networks v. Lucent Techs., Inc.,* No. 2-04-CV-40 (TJW), 2005 U.S. Dist. LEXIS 46840, at *8 (E.D. Tex. May 24, 2005) (finding no construction necessary for a phrase that included "substantially real-time"); *Tech Pharmacy Servs., LLC v. Alixa Rx LLC*, Civil Action No. 4:15-CV-766, 2016 U.S. Dist. LEXIS 149556, at *49 (E.D. Tex. Oct. 28, 2016) (the

court "expressly reject[ed] Defendants' indefiniteness argument" even though "the specification does not define specific boundaries for 'near' real-time").

Moreover, a POSITA reading the claims in the context of the specification would be informed about the scope of the invention with reasonable certainty. For example, the specification provides description of "real-time GPS location-based systems." '608 Patent at 13:11-15 ("It is appreciated that the system may work with both real-time GPS location-based systems, and pre-loaded mapping software such as DVD-based 'in-dash' navigational systems available on many high-end automobiles."). Likewise, Figure 8 includes element 200, as "Access NMEA 0183 Sentences From GPS."

FIG. 8
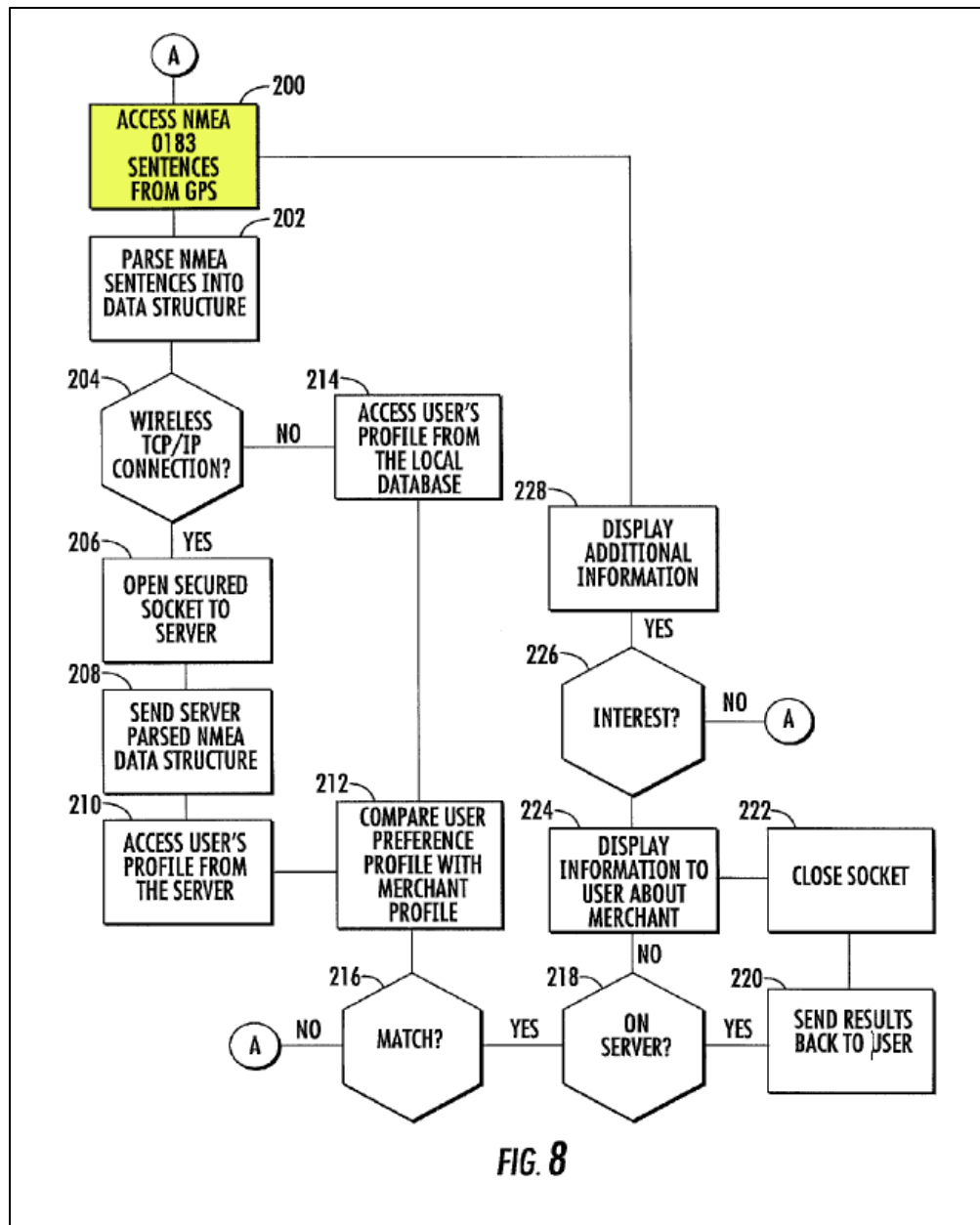
Id. at Figure 8 (highlight added). A POSITA will understand that National Marine Electronics Association ("NEMA") values are read in substantially real-time and the delay associated with processing steps (202 – 220) will make the information captured by the NMEA sentences, close to real-time. Accordingly, the Court finds that GM failed to prove by clear and convincing evidence that the phrase "substantially real-time updates" is indefinite.

2. Court's Construction

The Court finds that the term **"substantially real-time updates"** is not indefinite, and is

given its **plain and ordinary meaning.**

I. '466 Patent

The '466 Patent, titled "Scheduling Transmissions on Channels in a Wireless Network,"

issued on June 13, 2017, and was filed on April 18, 2016. The '466 Patent "relates to a mechanism

to support Internet Protocol data flows within a wireless communication system. The invention is

applicable to, but not limited to, gateway queuing algorithms in packet data transmissions, for

example, for use in the universal mobile telecommunication standard." '466 Patent at 1:21–26.

The Abstract of the '466 Patent states:

> Allocation of resources in a wireless network are described where
> resources are allocated for data of each channel having a second
> parameter above zero prior to another channel's data for
> transmission having a third parameter less than or equal to zero. The
> second parameter may be derived from a first channel's first
> parameter and the third parameter is derived from a second channel's
> first parameter.

Claim 1 of the '466 Patent is an illustrative claim and recites the following elements

(disputed terms in italics):

> 1.A user equipment (UE) comprising:
> circuitry configured to receive, from a network device, a first
> transmission including a *first parameter* corresponding to each
> of a plurality of channels and a second transmission including
> an allocation message for an uplink resource from the network
> device;
> a processor configured to allocate resources in response to the
> allocation message*, wherein resources are allocated for data
> of each channel having a second parameter above zero prior
> to another channel's data for transmission having a third
> parameter less than or equal to zero*; and
> wherein the *second parameter* is derived from a first channel's *first
> parameter* and the *third parameter* is derived from a second
> channel's *first parameter*.

a. "first parameter," "second "parameter," "third parameter," and "fourth parameter"

Disputed Term	IV's Proposal	GM's Proposal
"first parameter," "second "parameter," "third parameter," and "fourth parameter"	Plain and ordinary meaning.	The "first parameter," "second parameter," "third parameter," and "fourth parameter" are different parameters for a channel.

1. Analysis

The terms "first parameter," "second "parameter," "third parameter," and "fourth parameter" appear in Claims 1, 3, 6, and 8 of the '466 Patent. The parties dispute whether the "first parameter," "second parameter," "third parameter," and "fourth parameter" are different parameters for a channel.[21] GM argues that the first, second, third, and fourth parameters recited in Claims 1, 3, 6, and 8, should be construed to clarify that these are four different channel parameters—*i.e.*, that each one is a different parameter for a channel. GM contends that Claim 1 indicates that each channel has a first parameter, and each of those first parameters is received in a first transmission. According to GM, this demonstrates that the patentee knew how to refer to the same parameter in different channels.

GM further argues that Claim 1 later recites "wherein resources are allocated for data of each channel having a second parameter above zero prior to another channel's data for transmission having a third parameter less than or equal to zero." GM contends that if the second and third parameters were the same parameter but for different channels, the claims would have stated "wherein resources are allocated for data of each channel having a second parameter above zero prior to another channel's data for transmission having a [second] parameter less than or equal

---

[21] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 43-44); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 36-37); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 28-29); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 25).

to zero." GM also contends that the specification confirms that these are four different channel parameters.

IV responds that Claim 1 indicates that the second and third parameters will have different values ("above zero" vs. "less than or equal to zero"), and are derived from first parameters of different channels. IV argues that dependent Claim 3 further specifies how the second and third parameters are derived from the first parameter, stating that "the second parameter is derived by multiplying the first channel's first parameter with a fourth parameter and the third parameter is derived by multiplying the second channel's first parameter with the fourth parameter." IV contends this show that the second and third parameters may be the same variable but with different values, because the second and third parameters are calculated in the same way: by multiplying their respective first parameters by a fourth parameter.

The Court agrees with GM. IV provides no evidence that the second and third parameters may be the same parameter. Even when the second and third parameters are "derived from" the first parameter, this does not mean that they derive from the first parameter in identical ways such that they are the same parameter. Indeed, Claim 3 specifies the different ways in which the second and third parameters are derived from the first parameter. If the second and third parameter were the same parameter, there would be no need to specify two different parameters, the claim would simply refer to a single parameter.

As the Federal Circuit has consistently held, each of these terms is presumed to have a separate meaning and, therefore, presumed to refer to different parameters. *See Bd. of Regents v. BENQ Am. Corp.*, 533 F.3d 1362, 1371 (Fed. Cir. 2008) ("Different claim terms are presumed to have different meanings"); *see also Bushnell Hawthorne, LLC v. Cisco Systems, Inc.,* 813 Fed. App'x. 522, 526 (Fed. Cir. 2020) (construing "one or more IP addresses," "one or more second IP

addresses," and "one or more third IP addresses" as referring to different IP addresses). This is not a disclaimer as IV contends, but instead is recognizing the plain meaning of the terms as drafted by the patentee.

2. Court's Construction

For the reasons set forth above, the Court construes the terms **"first parameter," "second parameter," "third parameter,"** and **"fourth parameter"** are different parameters for a channel.

d. "wherein resources are allocated for data of each channel of a radio bearer having a second parameter above zero prior to another channel's data for transmission having a third parameter less than or equal to zero"

Disputed Term	IV's Proposal	GM's Proposal
"wherein resources are allocated for data of each channel of a radio bearer having a second parameter above zero prior to another channel's data for transmission having a third parameter less than or equal to zero"	"wherein resources are allocated for a first set of data before any are allocated for a second set of data, where the first set of data is the data of each channel of a radio bearer having a second parameter above zero and the second set of data is another channel's data-for-transmission having a third parameter less than or equal to zero"	Plain and ordinary meaning.

1. Analysis

The phrase "wherein resources are allocated for data of each channel of a radio bearer having a second parameter above zero prior to another channel's data for transmission having a third parameter less than or equal to zero" appears in Claims 1 and 6 of the '466 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same general meaning in each claim. The parties dispute whether the phrase requires construction.[22]

---

[22] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 45-46); Plaintiff's Responsive Claim Construction Brief (Dkt.

IV notes that the Eastern District of Texas construed this same claim phrase in the '466 Patent. Dkt. No. 55 at 38 (citing *Intellectual Ventures II LLC v. Sprint Spectrum L.P.*, No. 2:17-cv-662-JRG-RSP, 2018 U.S. Dist. LEXIS 195419, at *35-40 (E.D. Tex. Nov. 15, 2018) ("*Sprint*")). The dispute in *Sprint* was whether the phrase required that "resources must be allocated such that transmission of the data of each channel [of a radio bearer] having a second parameter above zero takes place before transmission of data of another channel [of a radio bearer] having a third parameter less than or equal to zero," as Sprint contended, or whether the phrase required only that the "allocation of resources for the data of each channel of a radio bearer having a second parameter above zero is provided before the allocation for another channel's data for transmission having a third parameter less than or equal to zero," as IV contended.

The District Court rejected Sprint's arguments and ultimately "agree[d] with Plaintiff that 'for transmission' is an attribute of the 'another channel's data' [and] does not mandate that data with the second parameter greater than zero is necessarily transmitted before the data with the third parameter less than or equal to zero." *Id.* at *38. IV argues that the Court should adopt the Eastern District's construction to clarify what the disputed claim phrase means and what it does not mean.

GM responds that the claim language is clear on its face. GM further argues that IV does explain why the Court should adopt the construction in *Sprint*. GM contends that IV's only argument is that a different court adopted this construction.

The Court will give the phrase its plain and ordinary meaning, because the parties have not identified a dispute over the scope of the claims. IV argues plain and ordinary meaning for a majority of the disputed terms, but for an unidentified reason asks the Court to construe this phrase.

No. 55 at 37-39); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 29); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 26).

IV did not provide a persuasive reason to adopt *Sprint's* construction, especially given that it adds further limitations to the claim. *See, e.g., United States Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.").

2. Court's Construction

For the reasons set forth above, the phrase **"wherein resources are allocated for data of each channel of a radio bearer having a second parameter above zero prior to another channel's data for transmission having a third parameter less than or equal to zero"** will be given its **plain and ordinary meaning.**

J. '628 Patent

The '628 Patent, titled "Video Recorder," issued on April 3, 2018, and was filed on December 8, 2009. The '628 Patent "relates to image analysis and, more particularly, to image compression using adaptive coding." '628 Patent at 1:34–36. The Abstract of the '318 Patent states:

> Methods and apparatuses are disclosed for recording video data of an event. The apparatuses include a processor communicating with memory. The memory stores video data of the event captured by a camera, and the video data includes a series of picture frames of the event. A loop buffer also stores video data of the event captured by the camera. A rule-based engine stored in the memory uses a set of rules to store the contents of the loop buffer in the memory. The apparatus utilizes the loop buffer to provide video data prior to occurrence of the event.

Claim 1 of the '318 Patent is an illustrative claim and recites the following elements

(disputed terms in italics):

> 1.A video recorder, comprising:
> a processor;
> a buffer in communication with the processor; and
> a memory device in communication with the processor;
> wherein the processor is configured to:
> *store video data in the buffer*; detect a movement of a door latch of
>   a vehicle;
> attempt to detect a wireless key fob configured to provide digital
>   authorization for an attempted access event; and
> transfer at least a portion of the video data from the buffer to the
>   memory device if and only if the wireless key fob has not been
>   detected.

a. "store video data in the buffer"

Disputed Term	IV's Proposal	GM's Proposal
"store video data in the buffer"	Plain and ordinary meaning.	"store video data in a loop buffer for a predetermined time"

1. Analysis

The term "store video data in the buffer" appears in Claim 1 of the '628 Patent. The parties

dispute whether term requires construction.[23] The '628 Patent clearly and unmistakably indicates

that the "buffer" recited in the claims is a "loop buffer." For example, the "Brief Summary of the

Invention" defines the invention as follows:

> *The video recorder of this invention* can record 'backwards in time.'
> That is, *this invention provides time-delayed video and audio data.*
> *The video recorder stores video* and audio *data in a loop buffer. The*
> *loop buffer stores video and audio data for a predetermined*
> *duration* or elapse of time. Because the loop buffer stores anywhere
> from a few seconds to several minutes of video data, the loop buffer,
> at any one time, provides data from a time recently preceding the
> recorded event. *The loop buffer thus provides both real-time and*
> *time-delayed video and audio data* of the event captured by the
> camera.

---

[23] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 46-47); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 39-40); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 29-31); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 27-28).

'628 Patent at 2:12–22 (emphasis added). The Summary of Invention further reiterates that the invention includes a loop buffer that stores video data: "[t]his invention discloses methods and apparatuses for recording video data of an event.… A loop buffer also stores video data of the event captured by the camera." *Id.* at 2:25–36; *see also, id.* at 3:53–62. The "loop buffer" is described as part of "this invention" in the detailed description, because it provides the time-delayed video. *Id.* at 6:58–62, 7:9–19, 4:30–51 ("The video recorder 10 also includes the loop buffer 14. The loop buffer 14 also stores video data 17 of the event captured by the at least one camera 18. The loop buffer 14, however, provides time-delated video data of the event…Because the loop buffer 14 stores anywhere from a few seconds to several minutes of video data ").

The detailed description further defines the loop buffer as something that stores video data for a predetermined time of a few seconds to several minutes by observing that "[a]s those of ordinary skill in the art understand, the loop buffer 14 stores the video data 17 for a predetermined duration or elapse of time (typically from a few seconds to several minutes)." *Id.* at 4:33–37. Moreover, the specification refers to a loop buffer over 80 times, and expressly incorporates by reference the description of the "known" "operational and architectural concepts of loop buffers" as described in U.S. Patent No. 6,598,155. *Id.* at 4:51–58. Accordingly, the Court finds that "[t]he public is entitled to take the patentee at his word and the word was that the invention" includes storing video in a loop buffer for a predetermined time of at least a few seconds to several minutes. *Honeywell Int'l, Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1318 (Fed. Cir. 2006) (construing "filter" to mean "fuel filter").

IV contends that GM seeks to improperly import limitations into the term "store video data in the buffer." IV argues that GM has not shown a clear indication that the patentee intended to limit the claims. According to IV, the claims themselves show that the term "buffer" is broader

than the term "loop buffer." IV argues that Claim 6 uses the term "loop buffer," and that Claim 1 uses the broader term "buffer." IV contends that it is settled law that you cannot read a limitation present in another claim without the express reference to that limitation. IV further argues that the specification itself confirms that the patentee did not intend to limit the invention to specific embodiments. Dkt. No. 55 at 40-41(citing '628 Patent at 2:44–51).

The Court disagrees with IV that the doctrine of claim differentiation applies in this instance given the other intrinsic evidence discussed above. Indeed, the Federal Circuit has construed claim terms consistent with the specification description of the "present invention" despite claim differentiation challenges. *See, e.g.*, *Marine Polymer Techs., Inc. v. HemCon, Inc.*, 672 F.3d 1350, 1359 (Fed. Cir. 2012) ("biocompatible" construed based on specification reference to the "present invention"); *Am. Calcar, Inc. v. Am. Honda Motor Co.*, 651 F.3d 1318, 1337 (Fed. Cir. 2011) ("messages" construed consistent with specification definition). Simply stated, "[c]laim differentiation is not conclusive; it is a guide, not a rigid rule." *Howmedica Osteonics Corp. v. Zimmer, Inc.*, 822 F.3d 1312, 1323 (Fed. Cir. 2016); *see also, Hormone Research Found., Inc. v. Genentech, Inc.*, 904 F.2d 1558, 1567 n.15 (Fed. Cir. 1990) (stating that the doctrine of claim differentiation "cannot overshadow the express and contrary intentions of the patent draftsman").

The specification clearly and unambiguously defined the loop buffer as an critical feature of the present invention. For example, the specification states the following

> *The video recorder 10 of this invention* also provides *time-delayed video and audio data. The video recorder 10 stores video and audio data in a loop buffer 14*. The loop buffer 14 stores video and audio data for a predetermined duration or elapse of time. Because the loop buffer 14 stores anywhere from a few seconds to several minutes of video data, the loop buffer 14, at any one time, provides data from a time recently preceding the recorded event. *The loop buffer 14 thus provides both real-time and time-delayed video and audio data of the event captured by the camera. As this patent will further explain, this "time-delayed" video and audio data may be very useful for*

security and surveillance uses.

'628 Patent at 3:57–60 (emphasis added). "When a patentee 'describes the features of the present invention as a whole,' he alerts the reader that 'this description limits the scope of the invention.'" *Pacing Techs., LLC v. Garmin Int'l, Inc.*, 778 F.3d 1021, 1025 (Fed. Cir. 2015) (quoting *Regents of Univ. of Minn. v. AGA Med. Corp.*, 717 F.3d 929, 936 (Fed. Cir. 2013)). Accordingly, the Court construes "buffer" to mean "loop buffer." GM did not provide a persuasive reason for adopting the additional language of "for a predetermined time." Finally, to be clear, the Court is not finding a "disclaimer," but instead is construing the term to mean what a POSITA would understand the term to mean in the context of the intrinsic evidence.

2. Court's Construction

For the reasons set forth above, the Court construes the term **"buffer"** to mean **"loop buffer."**

K. '138 Patent

The '138 Patent, titled "Determining Buffer Occupancy and Selecting Data for Transmission on a Radio Bearer," issued on May 14, 2019, and was filed on June 9, 2017. The '138 Patent generally "relates to a mechanism to support Internet Protocol data flows within a wireless communication system. The invention is applicable to … gateway queuing algorithms in packet data transmissions, for example, for use in the universal mobile telecommunication standard.." '138 Patent at 1:23–28. The Abstract of the '138 Patent states:

> A user equipment (UE) may determine and transmit to a network buffer occupancy associated with one or more radio bearers. The UE may select data for transmission from radio bearers using a received single allocation of uplink resources. The selection of the data may occur using a first single iteration and a second iteration.

Claim 1 of the '138 Patent is an illustrative claim and recites the following elements (disputed terms in italics):

1.A user equipment (UE) comprising:

a processor communicatively coupled to a transmitter and circuitry
    configured to receive; and

the processor is configured to:

cause the circuitry to receive parameters associated with a
    plurality of radio bearers,

determine a plurality of buffer occupancies, wherein each of the
    plurality of buffer occupancies is associated with one or
    more radio bearers of the plurality of radio bearers,

cause the transmitter to transmit a message including the plurality
    of buffer occupancies to a network,

cause the circuitry to receive a single allocation of uplink
    resources,

select data from the plurality of radio bearers for transmission
    using the single allocation of uplink resources, *wherein the
    selection of the data occurs using a first iteration and a
    second iteration,*

*wherein in the first iteration, the selection of the data is selected
    from a subset of the plurality of radio bearers based on the
    received parameters,*

*wherein in the second iteration, the selection of the data is based on
    buffered data for respective radio bearers*, and cause the
    transmitter to transmit a signal including the selected data.

a. "wherein the selection of the data occurs using a first iteration and a second iteration"

Disputed Term	IV's Proposal	GM's Proposal
"wherein the selection of the data occurs using a first iteration and a second iteration"	Plain and ordinary meaning.	"wherein the selection of the data occurs by repeating the same steps twice"

1. Analysis

The phrase "wherein the selection of the data occurs using a first iteration and a second iteration" appears in Claims 1 and 8 of the '138 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same general meaning in each claim. The parties dispute whether the phrase should be construed to mean "by repeating the same steps

twice," as GM proposes.[24]

GM argues that its proposed construction "is a clarification of the plain and ordinary meaning of the term to aid the jury in understanding what iteration means in the context of a computer implemented algorithm." Dkt. No. 47 at 49. GM further argues that the specification uses iteration in the exact same way to describe the algorithm shown in FIG. 6, which repeats the same steps (605 - 675) in the first and second iterations to select to the transmission from the radio bearers. Dkt. No. 47 at 49 (citing '138 Patent at 11:32–38).

IV responds that GM's construction is wrong because it is contradicted by the claims themselves. IV argues that the surrounding claim language indicates that the terms "first limitation" and "second limitation" are defined to require different requirements for the selection of the data, but GM's construction requires the selection of data to repeat "the same steps twice." The Court agrees with IV.

Claim 1 recites the following:

> select data from the plurality of radio bearers for transmission using the single allocation of uplink resources, *wherein the selection of the data occurs using a first iteration and a second iteration*,
> wherein in the *first iteration, the selection of the data is selected from a subset of the plurality of radio bearers* based on the received parameters,
> wherein in the second iteration, *the selection of the data is based on buffered data for respective radio bearers* …

'138 Patent at Claim 1. As recited, in the first iteration "the selection of the data is selected from a subset of the plurality of radio bearers based on the received parameters," and in the second iteration "the selection of the data is based on buffered data for respective radio bearers." In

---

[24] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 48-49); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 41-42); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 31); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 28-29).

addition, GM's construction would confuse the claim by introducing "steps" and removing the antecedent basis for "the first iteration" and "the second iteration" recited later in the claim. *Chimie v. PPG Industries, Inc.*, 402 F.3d 1371, 1377 (Fed. Cir. 2005) ("Claim construction begins with the intrinsic evidence of record, looking first to the claim language itself to define the scope of the patented invention."). Accordingly, GM has failed to provide a persuasive reason to adopt its "clarification of the plain and ordinary meaning."

2. Court's Construction

For the reasons set forth above, the phrase **"wherein the selection of the data occurs using a first iteration and a second iteration"** is given its **plain and ordinary meaning.**

b. "wherein in the first iteration, the selection of the data is selected from a subset of the plurality of radio bearers based on the received parameters, wherein in the second iteration, the selection of the data is based on buffered data for respective radio bearers"

Disputed Term	IV's Proposal	GM's Proposal
"wherein in the first iteration, the selection of the data is selected from a subset of the plurality of radio bearers based on the received parameters, wherein in the second iteration, the selection of the data is based on buffered data for respective radio bearers"	Plain and ordinary meaning. Not indefinite.	Indefinite.

1. Analysis

The phrase "wherein in the first iteration, the selection of the data is selected from a subset of the plurality of radio bearers based on the received parameters, wherein in the second iteration, the selection of the data is based on buffered data for respective radio bearers" appears in Claims 1 and 8 of the '138 Patent. The Court finds that the phrase is used consistently in the claims and is

intended to have the same general meaning in each claim. The parties dispute whether phrase is indefinite.[25]

Starting with its argument for the previous term, GM contends that the term "iteration" means repeating the same steps. GM argues that these claim terms contradict that well understood meaning. According to GM, the claim could be interpreted such that the first iteration and the second iteration are using different steps. GM argues that this means a POSITA would not have understood the "scope of the invention with reasonable certainty," because the specification does not describe iterations that select data using different steps. *Nautilus Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). GM also contends that the term is open to multiple interpretations, which render Claims 1 and 8 confusing and ambiguous because they would require different algorithms and would result in vastly different selections of data.

IV responds that GM's argument rests on its rewriting of the word "iteration" to require "repeating the same steps twice." IV argues that any confusion in the claim is a result of GM's construction. The Court agrees with IV. The claims describe "a first iteration" and "a second iteration." The surrounding claim language further defines the different requirements for the selection of the data in each iteration. Accordingly, the Court finds that GM has failed to prove by clear and convincing evidence that the phrase is indefinite.

2. Court's Construction

The Court finds that the phrase **"wherein in the first iteration, the selection of the data is selected from a subset of the plurality of radio bearers based on the received parameters,**

---

[25] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 50-51); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 41-42); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 31); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 28-29).

wherein in the second iteration, the selection of the data is based on buffered data for respective radio bearers" is not indefinite, and is given its **plain and ordinary meaning**.

V.   LEGAL PRINCIPLES - MEANS-PLUS-FUNCION LIMITATIONS

A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112(f); *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). Section 112(f) provides that a structure may be claimed as a "means . . . for performing a specified function," and that an act may be claimed as a "step for performing a specified function." *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

But § 112(f) does not apply to all functional claim language. There is a rebuttable presumption that § 112(f) applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112(f) does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Williamson*, 792 F.3d at 1349 (§ 112(f) does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); *Masco Corp.*, 303 F.3d at 1326 (§ 112(f) does not apply when the claim includes an "act" corresponding to "how the function is performed"); *Personalized Media Communications, L.L.C. v. International Trade Commission*, 161 F.3d 696, 704 (Fed. Cir. 1998) (§ 112(f) does not apply when the claim

includes "sufficient structure, material, or acts within the claim itself to perform entirely the recited function . . . even if the claim uses the term 'means.'") (quotation marks and citation omitted).

When it applies, § 112(f) limits the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step . . . is a determination of the function of the means-plus-function limitation." *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.*

A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Id.* The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The corresponding structure "must include all structure that actually performs the recited function." *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1298 (Fed. Cir. 2005). However, § 112(f) does not permit "incorporation of structure from the written description beyond that necessary to perform the claimed function." *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

For § 112(f) limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather

the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

A. '771 Patent

a. "local content module that stores content that can be accessed by said client devices directly through said high-speed access point"

Disputed Term	IV's Proposal	GM's Proposal
"local content module that stores content that can be accessed by said client devices directly through said high-speed access point"	Not subject to §112(f), not indefinite.	Subject to §112(f); Indefinite.

1. Analysis

The phrase "local content module that stores content that can be accessed by said client devices directly through said high-speed access point" appears in Claim 4 of the '771 Patent. The parties dispute whether the phrase is subject to § 112(f).[26] GM contends that the disputed language in Claim 4 of the '771 Patent is purely functional, and the addition of the introductory phrase "local content module" does nothing to change the functional nature of the phrase. GM further contends that the term "module" is a well-known nonce word that often functions as a substitute for "means" in the context of § 112(f). (Dkt. No. 47 at 53) (citing *Williamson*, 792 F.3d at 1350). According to GM, the specification contains no description of any structure for the "local content module." GM also argues that the "local content module" phrase is indefinite, because the claimed function is performed by a computer and the specification contains no algorithm.

Claim 4 does not recite the word "means," and GM has not overcome the rebuttable presumption that § 112(f) does not apply. Contrary to GM's suggestion, "*Williamson* does not …

_____

[26] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 52-55); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 42-45); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 32-33); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 29).

stand for the broad proposition that the term 'module' automatically places it among terms such as 'means' and 'step for,' thus triggering a presumption that § 112(f) applies." *See, e.g.*, *Blast Motion, Inc. v. Zepp Labs, Inc.*, No. 15-CV-700 JLS (NLS), 2017 U.S. Dist. LEXIS 16549, at *54 (S.D. Cal. Feb. 6, 2017) (holding that "data storage module" is not a means-plus-function term).

Therefore, the analysis proceeds in two steps. First, the Court must determine whether the phrase is in means-plus-function form pursuant to 35 U.S.C. § 112(f). *See Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1097 (Fed. Cir. 2014). If the Court determines that the phrase recites a means-plus-function limitation, then the Court proceeds to the next step and attempts "to construe the disputed claim term by identifying the corresponding structure, material, or acts described in the specification to which the term will be limited." *Id.*

The context of Claim 4 confirms the structural nature of the claimed "local content module." Claim 4 recites that the local content module "stores content that can be accessed by said client devices directly through said high-speed access point." A POSITA would understand that storing content involves a normal use of computer memory that can be accomplished by a general-purpose computer without special programming. *See In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1316 (Fed. Cir. 2011) (finding no invocation of § 112, ¶ 6 where the recited "functions can be achieved by any general purpose computer without special programming"). Memory devices store content and do not require specially programmed processors to practice the limitation. Claim 4 only requires that the local content module to "store[] content that can be accessed …," which is what memory devices do, including times when content is not actively being written on or accessed from the memory device.

It is true that when a limitation is a means-plus-function limitation, and the corresponding structure is software, there needs to be an algorithm for the software or else the means-plus-

function limitation will be considered indefinite unless the function can be performed by a general purpose computer. *See Function Media, LLC v. Google, Inc.*, 708 F.3d 1310, 1318 (Fed. Cir. 2013) (holding that the corresponding disclosure for a computer-implemented means-plus-function claim is an algorithm). But that authority is not on point because that definiteness analysis is triggered only where the limitation is a means-plus-function limitation. Accordingly, the Court rejects GM's position, and determines that the phrase is not governed by § 112(f).

2. Court's Construction

For the reasons set forth above, the phrase **"local content module that stores content that can be accessed by said client devices directly through said high-speed access point"** is not subject to § 112(f), and will be given its plain and ordinary meaning.

B. '318 Patent

a. "a processor configured to determine the length of time of the transmit opportunity based on a priority of the first queue"

Disputed Term	IV's Proposal	GM's Proposal
"a processor configured to determine the length of time of the transmit opportunity based on a priority of the first queue"	Not subject to §112(f), not indefinite.	Subject to §112(f); Indefinite.

1. Analysis

The phrase "a processor configured to determine the length of time of the transmit opportunity based on a priority of the first queue" appears in Claim 8 of the '318 Patent. The parties dispute whether the phrase is subject to § 112(f).[27] GM contends that the "processor configured to" language in Claim 1 of the '318 Patent is subject to construction under § 112(f),

---

[27] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 55-56); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 44-48); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 33-34); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 30).

and is indefinite because the claimed function is performed by a general-purpose computer and the specification contains no algorithm for performing the claimed function. GM argues that the "processor" language in Claim 8 does not recite sufficient structure for performing the claimed function. According to GM, the "processor is configured to" claim language is indefinite, because the specification contains no algorithm for performing the claimed function.

Claim 8 does not recite the word "means," and GM has not overcome the rebuttable presumption that § 112(f) does not apply. Therefore, the analysis proceeds in two steps. First, the Court must determine whether the phrase is in means-plus-function form pursuant to 35 U.S.C. § 112(f). *See Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1097 (Fed. Cir. 2014). If the Court determines that the phrase recites a means-plus-function limitation, then the Court proceeds to the next step and attempts "to construe the disputed claim term by identifying the corresponding structure, material, or acts described in the specification to which the term will be limited." *Id.*

The context of the claim confirms the structural nature of the claimed "processor." Claim 8 recites a "system, comprising: [1] a first queue configured to store data frames to be transmit ted during a transmitting station's transmit opportunity, wherein the transmit opportunity corresponds to a length of time during which the transmitting station will transmit data frames from the first queue to a shared-communications channel, …; [2] a processor configured to determine the length of time of the transmit opportunity based on a priority of the first queue." As indicated, the claim language recites structure; the claimed "processor" is configured to determine the transmit opportunity's "length of time" recited in the first claim element (*i.e.*, the "first queue") based on the first queue's priority.

A POSITA would understand the claimed "processor" to refer to a class of structures well-known in the art. Indeed, "'processor' is not a 'nonce' term but rather connotes a class of

structures." *Cellular Communs. Equip. LLC v. AT&T, Inc.*, No. 2:15-CV-576-RWS-RSP, 2016 U.S. Dist. LEXIS 174666, at *96 (E.D. Tex. Dec. 18, 2016) (internal citation omitted). "A 'processor' in the computer arts is commonly understood to refer to the component of a computer that executes software instructions and performs computations." *Typemock, Ltd. v. Telerik, Inc.*, No. 17-10274-RGS, 2018 U.S. Dist. LEXIS 149110, at *16 (D. Mass. Aug. 31, 2018). "[A]s … courts have noted, a processor generally refers to a tangible object that can be purchased and that can perform certain functions even without specific instructions. Thus, unlike terms such as 'means,' 'element,' and 'device' that typically do not connote structure, 'processor' can on its own recite at least some structure to persons of ordinary skill in the art." *Fisher-Rosemount Sys. v. ABB Ltd.*, No. 4:18-CV-00178, 2019 U.S. Dist. LEXIS 214507, at *50 (S.D. Tex. Dec. 12, 2019) (internal citation omitted). "The term processor is 'not used as generic terms or black box recitations of structure or abstractions, but rather as [a] specific reference' to processors that are known in the art." *Id.* at *52 (quoting *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1008 (Fed. Cir. 2018)).

Moreover, by reciting the objectives of the "processor," and how the processor operates within the context of the claimed invention, the claim language connotes sufficiently definite structure to one of skill in the art. *See, e.g., Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1319-21 (Fed. Cir. 2004) (finding "circuit [for performing a function]" to be sufficiently definite structure because the claim recited the "objectives and operations" of the circuit); *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1295, 1301 (Fed. Cir. 2014) (finding "heuristic [for performing a function]" to be sufficiently definite structure because the patent described the operation and objectives of the heuristic); *Collaborative Agreements, LLC v. Adobe Sys.*, No. 15-cv-03853-EMC, 2015 U.S. Dist. LEXIS 161809, at *11-*24 (N.D. Cal. Dec. 2, 2015) (determining

"code segment [for performing a function]" to be sufficiently definite structure because the claim described the operation of the code segment); *Finjan, Inc. v. Proofpoint, Inc.*, No. 13-cv-05808-HSG, 2015 U.S. Dist. LEXIS 162504, at *31-*32 (N.D. Cal. Dec. 3, 2015) (determining "processor [for performing a function]" to be sufficiently definite structure because the claim described how the processor functions with the other claim components). Accordingly, Claim 8 connotes sufficient structure about the claimed "processor."

The specification further supports this understanding of the disputed phrase. The specification includes an exemplary embodiment of processor 203:
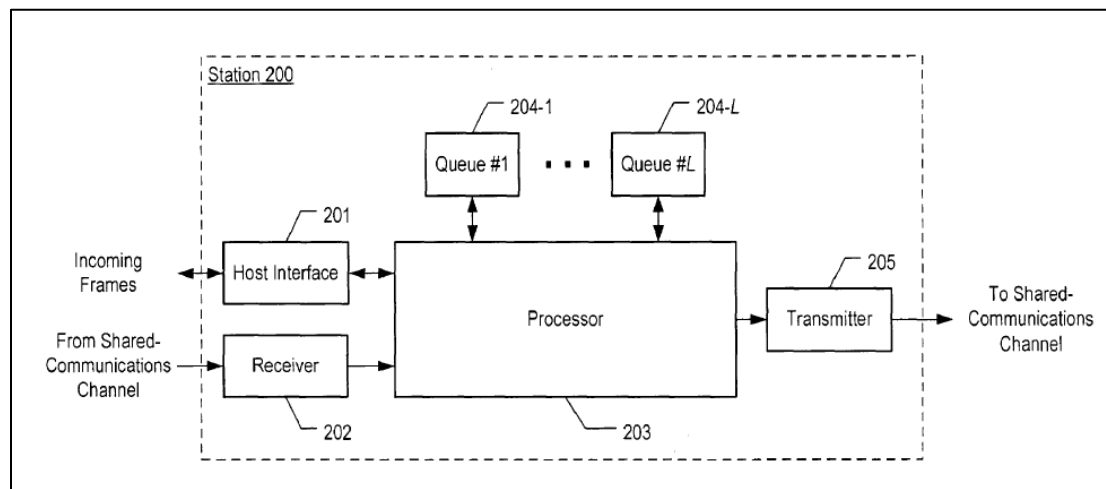
'318 Patent at Figure 2. Regarding Figure 2, the specification states the following:

> FIG. 2 depicts a block diagram of the salient components of an IEEE 802.11 station in accordance with the illustrative embodiment of the present invention. Station 200 is capable of receiving a succession of frames from one or more sources and of segregating, queuing, and transmitting the frames based on their class of service.
>
> Station 200 comprises: host interface 201, receiver 202, processor 203, queues 204-1 to 204-L, wherein L is a positive integer greater than one, and transmitter 205, interconnected as shown.
>
> Host interface 201 a circuit that is capable of receiving data and instructions from a host (not shown), in well-known fashion, and of forwarding them to processor 203. Furthermore, host interface 201 enables station 200 to send data and status indicators to the host. It

> will be clear to those skilled in the art how to make and use host interface 201.
>
> Receiver 202 is a circuit that is capable of receiving frames from shared-communications channel, in well-known fashion, and of forwarding them to processor 203. The frames include both data frames and control frames, such as request-to-send, clear-to-send, and acknowledgement frames.
>
> Processor 203 is a general-purpose processor that is capable of performing the tasks described below and with respect to FIGS. 3 and 4. It will be clear to those skilled in the art, after reading this specification, how to make and use processor 203.

Id. at 2:52–3:10. The specification further explains how the processor works to carry out its claimed function through task 304 of Figure 3, which "depicts a flowchart of the salient tasks performed by the illustrative embodiment of the present invention." *Id.* at 3:25–5:3. The flowchart begins with task 301, where "host interface 201 receives data and instructions from a host that indicate that the data is to be transmitted onto the shared-communications channel and that the data is associated with application i." *Id.* at 3:27–30. Then, "[a]t task 302, processor 203 receives the data from host interface 201, divides the data into frames, in well-known fashion, and queues the frames onto the end of queue 204-i." *Id.* at 3:31–33. "At task 303, station 200 acquires, in well-known fashion, an opportunity to transmit one or more frames associated with application i[,]" and "[p]rocessor 203 continually determines from which one of queues 204-1 through 204-L to next draw frames at the next transmission opportunity." *Id.* at 3:34–63.

Task 304 relates to the processor's function recited in Claim 8 of determining the length of time of the transmit opportunity based on a priority of the first queue. *Id.* at 3:64–4:36. The specification explains: "At task 304, processor 203 determines the amount of time, T_i, that is to be afforded to the transmission of frames for queue 204-i at this transmission opportunity." *Id.* at 3:64–66. With regard to T_i (*i.e.*, the length of time of the transmit opportunity associated with application i), the specification states that "[t]he value of T_i can be static or dynamic and can be

the same for each station or different at each station[,]" and that "each station determines its own

values for T_i for each queue, and the value is updated periodically or sporadically." *Id.* at 3:66–

4:4.

> The specification provides details about how the processor can determine T_i:
>
> > In accordance with the illustrative embodiment of the present
> > invention, the value for T_i is based on:
> > i. the number of queues that have frames queued for
> >   transmission, or
> > ii. the number of frames queued in queue 204-i, or
> > iii. the latency tolerance of application i, or
> > iv. the throughput requirements of application i, or
> > v. the current number of frames queued in queue 204-i divided
> >   by Ni, or
> > vi. any combination of i, ii, iii, iv, and v.

Id. at 4:4–14. As an example, the specification states that "applications that are more latency

intolerant might be given larger values of T_i than applications that are less latency tolerant and

applications that have greater throughput requirements might be given larger values of T_i than

applications that have lesser throughput requirements. It will be clear to those skilled in the art,

after reading this specification, how to determine and use other criteria for establishing T_i for

application i." *Id.* at 4:14–21. The specification further explains: "To accomplish task 304,

processor 203 advantageously maintains a table that correlates T_i and the number of frames queued

in each queue to i. Table 1 depicts an illustrative version of this table." *Id.* at 4:22–36.

A POSITA would understand that devices like the one illustrated in Figure 2, described in

Figure 3, recited in the claims, and described in the specification, would have sufficiently definite

meaning as the name for a structure. Similar to the court's conclusion in *VR Optics, LLC v. Peloton

Interactive, Inc.*, the placement of "processor" alongside and in the same format as these other

structural terms highlights that the patents are using the term processor to connote a known

structure rather than as a nonce substitute for the word "means." 345 F. Supp. 3d 394, 410

(S.D.N.Y. 2018).

It is true that when a limitation is a means-plus-function limitation, and the corresponding structure is software, there needs to be an algorithm for the software or else the means-plus-function limitation will be considered indefinite unless the function can be performed by a general purpose computer. *See Function Media, LLC v. Google, Inc.*, 708 F.3d 1310, 1318 (Fed. Cir. 2013) (holding that the corresponding disclosure for a computer-implemented means-plus-function claim is an algorithm). But that authority is not on point because that definiteness analysis is triggered only where the limitation is a means-plus-function limitation. Accordingly, the Court rejects GM's position, and determines that the phrase is not governed by § 112(f).

2. Court's Construction

For the reasons set forth above, the phrase **"a processor configured to determine the length of time of the transmit opportunity based on a priority of the first queue"** is not subject to § 112(f), and will be given its plain and ordinary meaning.

C. '356 Patent

a. **"a processor configured to receive resource allocation information associated with an uplink physical control channel and a physical uplink shared channel have different resources. . ."**

Disputed Term	IV's Proposal	GM's Proposal
"a processor configured to receive resource allocation information associated with an uplink physical control channel and a physical uplink shared channel have different resources. . ." "the processor is further configured to send data over the physical uplink shared channel in assigned time intervals;" "the processor is further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information;"	Not subject to §112(f), not indefinite.	Subject to §112(f); Indefinite.

1. Analysis

The phrase "a processor configured to receive resource allocation information associated with an uplink physical control channel and a physical uplink shared channel have different resources. . .;" the phrase "the processor is further configured to send data over the physical uplink shared channel in assigned time intervals;" and the phrase "the processor is further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information" appear in Claim 1 of the '356 Patent. The parties dispute whether the phrases are subject to § 112(f).[28]

GM contends that the term "processor configured to" is subject to construction under § 112(f). GM argues that the "processor" language in Claim 1 does not recite sufficient structure for performing the claimed function. According to GM, the "processor is configured to" claim

---

[28] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 56-59); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 48-51); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 34-35); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 30-31).

language is indefinite because the claimed function is performed by a general-purpose computer and the specification contains no algorithm for performing the claimed function.

Claim 1 does not recite the word "means," and GM has not overcome the rebuttable presumption that § 112(f) does not apply. Therefore, the analysis proceeds in two steps. First, the Court must determine whether the phrase is in means-plus-function form pursuant to 35 U.S.C. § 112(f). *See Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1097 (Fed. Cir. 2014). If the Court determines that the phrase recites a means-plus-function limitation, then the Court proceeds to the next step and attempts "to construe the disputed claim term by identifying the corresponding structure, material, or acts described in the specification to which the term will be limited." *Id.*

The context of Claim 1 confirms the structural nature of the claimed "processor." Claim 1 is directed to "[a] user equipment (UE) comprising: a processor" configured as set forth in the claim. The various recited configurations indicate what information/data the processor is configured to send over a physical uplink shared channel or receive, e.g., from a downlink control channel. The claim also provides sufficient information about the processor's configured operations, inputs, and outputs, including its receipt of resource allocation information, transmission of data in assigned time intervals over a physical uplink shared channel, and, when not sending data, transmission of a signal based on the resource allocation information over an uplink physical control channel.

A POSITA would understand the claimed "processor" to refer to a class of structures well-known in the art. Indeed, "'processor' is not a 'nonce' term but rather connotes a class of structures." *Cellular Communs. Equip. LLC v. AT&T, Inc.*, No. 2:15-CV-576-RWS-RSP, 2016 U.S. Dist. LEXIS 174666, at *96 (E.D. Tex. Dec. 18, 2016) (internal citation omitted). "A 'processor' in the computer arts is commonly understood to refer to the component of a computer

that executes software instructions and performs computations." *Typemock, Ltd. v. Telerik, Inc.*, No. 17-10274-RGS, 2018 U.S. Dist. LEXIS 149110, at *16 (D. Mass. Aug. 31, 2018). "[A]s … courts have noted, a processor generally refers to a tangible object that can be purchased and that can perform certain functions even without specific instructions. Thus, unlike terms such as 'means,' 'element,' and 'device' that typically do not connote structure, 'processor' can on its own recite at least some structure to persons of ordinary skill in the art." *Fisher-Rosemount Sys. v. ABB Ltd.*, No. 4:18-CV-00178, 2019 U.S. Dist. LEXIS 214507, at *50 (S.D. Tex. Dec. 12, 2019) (internal citation omitted). "The term processor is 'not used as generic terms or black box recitations of structure or abstractions, but rather as [a] specific reference' to processors that are known in the art." *Id.* at *52 (quoting *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1008 (Fed. Cir. 2018)).

Moreover, by reciting the objectives of the "processor," and how the processor operates within the context of the claimed invention, the claim language connotes sufficiently definite structure to one of skill in the art. *See, e.g., Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1319-21 (Fed. Cir. 2004) (finding "circuit [for performing a function]" to be sufficiently definite structure because the claim recited the "objectives and operations" of the circuit); *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1295, 1301 (Fed. Cir. 2014) (finding "heuristic [for performing a function]" to be sufficiently definite structure because the patent described the operation and objectives of the heuristic); *Collaborative Agreements, LLC v. Adobe Sys.*, No. 15-cv-03853-EMC, 2015 U.S. Dist. LEXIS 161809, at *11-*24 (N.D. Cal. Dec. 2, 2015) (determining "code segment [for performing a function]" to be sufficiently definite structure because the claim described the operation of the code segment); *Finjan, Inc. v. Proofpoint, Inc.*, No. 13-cv-05808-HSG, 2015 U.S. Dist. LEXIS 162504, at *31-*32 (N.D. Cal. Dec. 3, 2015) (determining

"processor [for performing a function]" to be sufficiently definite structure because the claim described how the processor functions with the other claim components). Accordingly, Claim 1 connotes sufficient structure about the claimed "processor."

The specification further supports this understanding of the disputed phrase. The specification includes an exemplary embodiment of processor 504:
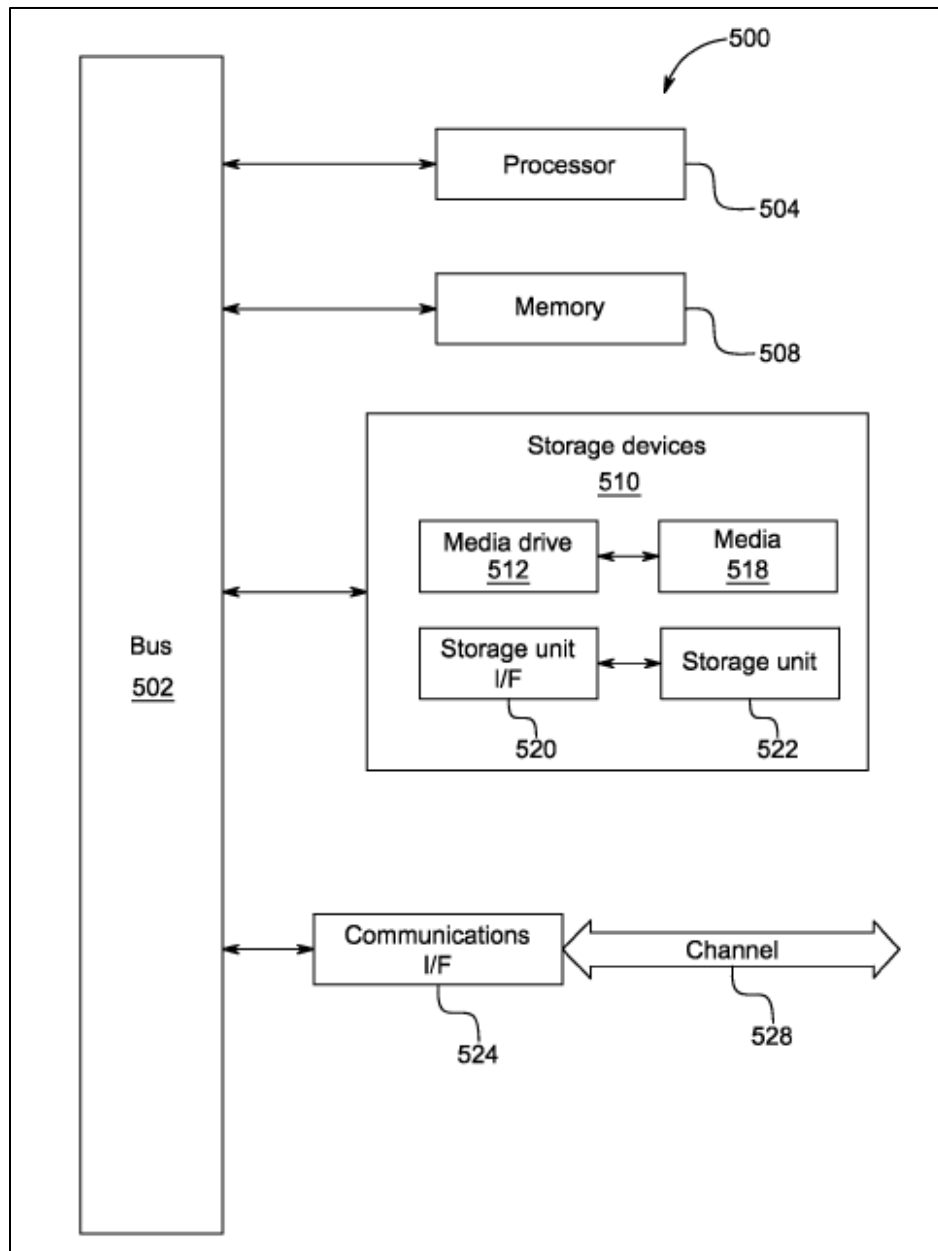
'356 Patent at Figure 5. Regarding Figure 5, the specification states the following:

FIG. 5 illustrates a typical computing system 500 that may be employed to implement processing functionality in embodiments of the invention. Computing systems of this type may be used in the radio controllers, the base stations, and the UEs, for example. Those skilled in the relevant art will also recognize how to implement the invention using other computer systems or architectures. Computing system 500 may represent, for example, a desktop, laptop, or notebook computer, hand-held computing device (PDA, cell phone, palmtop, etc.), mainframe, server, client, or any other type of special or general purpose computing device as may be desirable or appropriate for a given application or environment. Computing system 500 can include one or more processors, such as a processor 504. Processor 504 can be implemented using a general or special purpose processing engine such as, for example, a microprocessor, microcontroller or other control logic. In this example, processor 504 is connected to a bus 502 or other communications medium.

Computing system 500 can also include a main memory 508, such as random access memory (RAM) or other dynamic memory, for storing information and instructions to be executed by processor 504. Main memory 508 also may be used for storing temporary variables or other intermediate information during execution of instructions to be executed by processor 504. Computing system 500 may likewise include a read only memory ("ROM") or other static storage device coupled to bus 502 for storing static information and instructions for processor 504.

The computing system 500 may also include information storage system 510, which may include, for example, a media drive 512 and a removable storage interface 520. The media drive 512 may include a drive or other mechanism to support fixed or removable storage media, such as a hard disk drive, a floppy disk drive, a magnetic tape drive, an optical disk drive, a CD or DVD drive (R or RW), or other removable or fixed media drive. Storage media 518, may include, for example, a hard disk, floppy disk, magnetic tape, optical disk, CD or DVD, or other fixed or removable medium that is read by and written to by media drive 512. As these examples illustrate, the storage media 518 may include a computer-readable storage medium having stored therein particular computer software or data.

In alternative embodiments, information storage system 510 may include other similar components for allowing computer programs or other instructions or data to be loaded into computing system 500. Such components may include, for example, a removable storage

unit 522 and an interface 520, such as a program cartridge and
cartridge interface, a removable memory (for example, a flash
memory or other removable memory module) and memory slot, and
other removable storage units 522 and interfaces 520 that u allow
software and data to be transferred from the removable storage unit
522 to computing system 500.

Computing system 500 can also include a communications interface
524. Communications interface 524 can be used to allow software
and data to be transferred between computing system 500 and
external devices. Examples of communications interface 524 can
include a modem, a network interface (such as an Ethernet or other
NIC card), a communications port (such as for example, a USB
port), a PCMCIA slot and card, etc. Software and data transferred
via communications interface 524 are in the form of signals which
can be electronic, electromagnetic, optical or other signals capable
of being received by communications interface 524. These signals
are provided to communications interface 524 via a channel 528.
This channel 528 may carry signals and may be implemented using
a wireless medium, wire or cable, fiber optics, or other
communications medium. Some examples of a channel include a
phone line, a cellular phone link, an RF link, a network interface, a
local or wide area network, and other communications channels.

Id. at 7:44–8:47. As indicated, the specification explains that "[c]omputing system 500 can include

one or more processors, such as a processor 504. Processor 504 can be implemented using a general

or special purpose processing engine such as, for example, a microprocessor, microcontroller or

other control logic. In this example, processor 504 is connected to a bus 502 or other

communications medium." *Id.* at 7:56–61.

The specification also describes how the processor interacts with other structural

components of the computing system, including "a main memory 508 … for storing information

and instructions" and "temporary variables or other intermediate information during execution of

instructions to be executed by processor 504" "to cause the processor to perform specified

operations," including "the functions of the invention." *Id.* at 7:62–8:4, 8:48–9:5. The GGSN (*id.*

at 3:42-52) describes a computing device that is processing data from the mobile terminals UE.

The User Equipment is a processing component as well as the GGSN device. As shown in FIG 1,

the UE or the mobile terminal, processes data that the GGSN has transmitted from the internet or the Core Network to the Radio domain (RAN) and Node-B's (Element 112) all the way down to the UE (Element 110).

Further, the "processor" in the claim limitations would be readily understood as a processor (*e.g.*, the processor discussed above with reference to Figure 5) that is optimized for use in wireless digital communications and wireless networks such as those in compliance with, *e.g.*, technologies related to Time division-code division multiple access (TD-CDMA). As one example, a processor in the claim limitations may correspond to the disclosed structure of a processor of a computing system that may be used in the radio controllers, the base stations, and the UEs. *Id.* at 7:44–48. As another example, such a processor may correspond to the disclosed structured of the "control logic" of such exemplary system's processor that, "when executed by the processor 504, causes the processor 504 to perform the functions of the invention as described herein." *Id.* at 9:1–5.

A POSITA would understand that devices like the one illustrated in Figure 5, and recited in the claims and described in the specification, would have sufficiently definite meaning as the name for a structure. Similar to the court's conclusion in *VR Optics, LLC v. Peloton Interactive, Inc.*, the placement of "processor" alongside and in the same format as these other structural terms highlights that the patents are using the term processor to connote a known structure rather than as a nonce substitute for the word "means." 345 F. Supp. 3d 394, 410 (S.D.N.Y. 2018).

It is true that when a limitation is a means-plus-function limitation, and the corresponding structure is software, there needs to be an algorithm for the software or else the means-plus-function limitation will be considered indefinite unless the function can be performed by a general purpose computer. *See Function Media, LLC v. Google, Inc.*, 708 F.3d 1310, 1318 (Fed. Cir. 2013) (holding that the corresponding disclosure for a computer-implemented means-plus-function

claim is an algorithm). But that authority is not on point because that definiteness analysis is triggered only where the limitation is a means-plus-function limitation. Accordingly, the Court rejects GM's position, and determines that the phrase is not governed by § 112(f).

2. Court's Construction

For the reasons set forth above, the phrase **"a processor configured to receive resource allocation information associated with an uplink physical control channel, wherein the uplink physical control channel and a physical uplink shared channel have different resources;"** the phrase **"the processor is further configured to send data over the physical uplink shared channel in assigned time intervals;** and the phrase **"the processor is further configured, in a time interval that it is not sending information over the physical uplink shared channel, to send a signal over the uplink physical control channel based on the received resource allocation information"** are not subject to § 112(f), and will be given their plain and ordinary meaning.

D. '641 Patent

a. **"circuitry configured to receive broadcast information to access an orthogonal frequency division multiple access (OFDMA) system . . ."**

Disputed Term	IV's Proposal	GM's Proposal
"circuitry configured to receive broadcast information to access an orthogonal frequency division multiple access (OFDMA) system, wherein the broadcast information is received only in a first band having a first bandwidth and the broadcast information is carried by a plurality of groups of subcarriers with each group having a plurality of contiguous subcarriers . . . wherein the first band is contained within the second band . . . wherein the plurality of contiguous subcarriers have fixed spacing . . . wherein the first band is defined as a frequency segment with a bandwidth that is not greater than a smallest operating channel bandwidth among the plurality of operating channel bandwidths, the first band having a same value for the plurality of operating channel bandwidths."

"circuitry configured to determine a second bandwidth of a second band that is associated with the OFDMA system based upon the broadcast information received in the first band, wherein a second bandwidth of the second band is greater than the first bandwidth of the first band . . . wherein a data channel is carried by at least one subcarrier group of the second band . . . wherein a number of usable subcarriers is adjustable to realize a variable band, wherein the number of usable subcarriers is determined based on a plurality of operating channel bandwidths."

"wherein the mobile station is configured to operate within the plurality of operating channel bandwidths" | Not subject to §112(f), not indefinite. | Subject to §112(f); Indefinite. |

1. Analysis

The phrase "circuitry configured to receive broadcast information to access an orthogonal frequency division multiple access (OFDMA) system . . .," and the phrase "circuitry configured to determine a second bandwidth of a second band that is associated with the OFDMA system

based upon the broadcast information received in the first band . . .," appears in Claim 11 of the '641 Patent. The phrase "wherein the mobile station is configured to operate within the plurality of operating channel bandwidths" appears in Claims 11 and 25 of the '641 Patent. The parties dispute whether the phrases are subject to § 112(f).[29]

GM contends that the "circuitry configured to" language of Claim 11, and "mobile station is configured to" claim language in Claims 11 and 25 are subject to construction under § 112(f), because they do not recite sufficient structure for performing the claimed functions. GM further contends that the "circuitry" language and "mobile station" language are indefinite because the claimed function is performed by a general-purpose computer, and the specification does not contain an algorithm for performing the claimed function.

Claims 11 and 25 do not recite the word "means," and GM has not overcome the rebuttable presumption that § 112(f) does not apply. Therefore, the analysis proceeds in two steps. First, the Court must determine whether the phrase is in means-plus-function form pursuant to 35 U.S.C. § 112(f). *See Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1097 (Fed. Cir. 2014). If the Court determines that the phrase recites a means-plus-function limitation, then the Court proceeds to the next step and attempts "to construe the disputed claim term by identifying the corresponding structure, material, or acts described in the specification to which the term will be limited." *Id.*

The context of the claim confirms the structural nature of the claimed "circuitry" and "mobile station." Claim 11 describes the operation of the claimed "circuitry" in sufficient detail to suggest its structure to a POSITA, including its input (broadcast information in a first band having

---

[29] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 59-61); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 51-54); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 35-36); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 31).

a first bandwidth), its operation (*e.g.*, accessing an orthogonal frequency division multiple access (OFDMA) system and determining a second bandwidth of a second band that is associated with the OFDMA system"), and its output (a second bandwidth that is associated with the OFDMA system). By reciting the objectives of the "circuitry," and how the circuitry operates within the context of the claimed invention, the claim language connotes sufficiently definite structure to one of skill in the art. *See, e.g., Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1319-21 (Fed. Cir. 2004) (finding "circuit [for performing a function]" to be sufficiently definite structure because the claim recited the "objectives and operations" of the circuit); *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1295, 1301 (Fed. Cir. 2014) (finding "heuristic [for performing a function]" to be sufficiently definite structure because the patent described the operation and objectives of the heuristic); *Collaborative Agreements, LLC v. Adobe Sys.*, No. 15-cv-03853-EMC, 2015 U.S. Dist. LEXIS 161809, at *11-*24 (N.D. Cal. Dec. 2, 2015) (determining "code segment [for performing a function]" to be sufficiently definite structure because the claim described the operation of the code segment); *Finjan, Inc. v. Proofpoint, Inc.*, No. 13-cv-05808-HSG, 2015 U.S. Dist. LEXIS 162504, at *31-*32 (N.D. Cal. Dec. 3, 2015) (determining "processor [for performing a function]" to be sufficiently definite structure because the claim described how the processor functions with the other claim components). Accordingly, the "circuit" term does not invoke § 112(f).

The "mobile station" phrase recited in Claims 11 and 25 similarly connotes sufficient structure and does not invoke § 112(f). Each of the claims concludes with the limitation, "the mobile station is configured to operate within the plurality of operating channel bandwidths." GM's brief fails to identify any actual purported deficiency in the structure of the claimed "mobile station." Notwithstanding, the plain and ordinary meaning of "mobile station" alone connotes

structure (a wireless user device such as a cellular phone), and GM does not appear to contend otherwise.

In addition to the disputed claim language, the claims elsewhere require the mobile station to interact with a plurality of operating channel bandwidths, for example, by receiving (or being configured to receive) "broadcast information … in a first band having a first bandwidth [that] is carried by a plurality of groups of subcarriers with each group having a plurality of contiguous subcarriers; … wherein the number of usable subcarriers is determined based on a plurality of operating channel bandwidths, and wherein the first band is defined [in relation to] the plurality of operating channel bandwidths …" Like with "circuitry," in the context of the claims, a POSITA would understand the structure involved in configuring a mobile station to operate within the plurality of operating channel bandwidths.

The specification further supports this understanding of the disputed phrase. The specification includes an exemplary embodiment of mobile station, which includes circuitry:
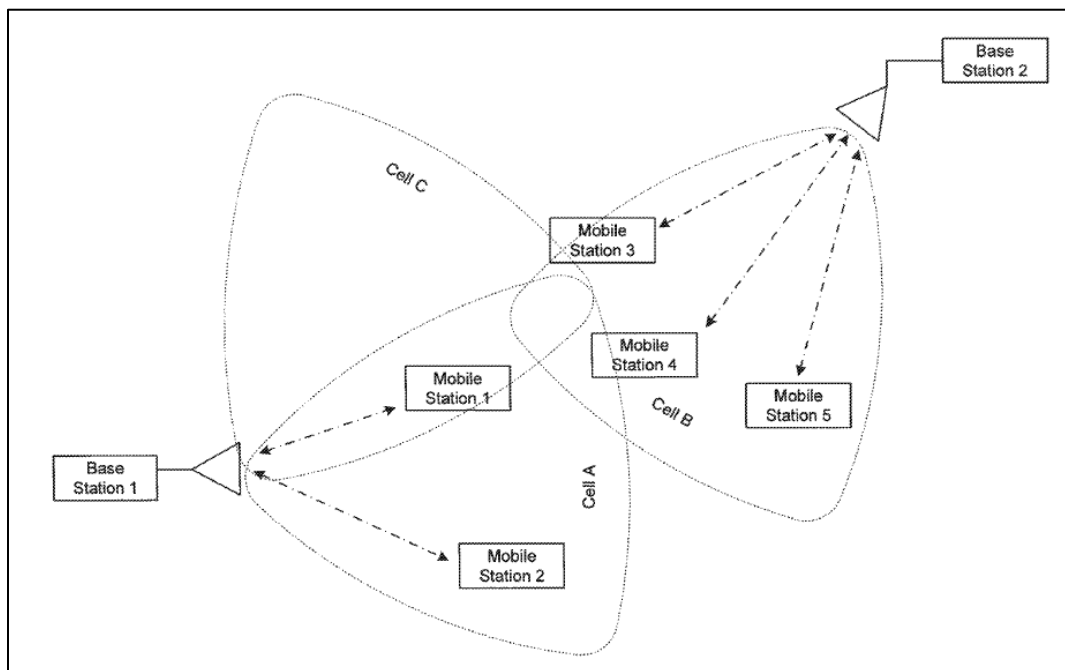
Regarding Figure 10, the specification states the following:

> FIG. 10 illustrates a multi-cell, multi-user cellular system comprising multiple base stations and mobile stations. The system of FIG. 10 is an example of an environment in which the attributes of the invention can be utilized.
>
> While specific circuitry may be employed to implement the above embodiments, aspects of the invention can be implemented in a suitable computing environment. Although not required, aspects of the invention may be implemented as computer-executable instructions, such as routines executed by a general-purpose computer, e.g., a server computer, wireless device or personal computer. Those skilled in the relevant art will appreciate that aspects of the invention can be practiced with other communications, data processing, or computer system configurations, including: Internet appliances, hand-held devices (including personal digital assistants (PDAs)), wearable computers, all manner of cellular or mobile phones, multi-processor systems, microprocessor-based or programmable consumer electronics, set-top boxes, network PCs, mini-computers, mainframe computers, and the like. Indeed, the term "computer" refers to any of the above devices and systems, as well as any data processor.

'641 Patent at 7:15–35. A POSITA would understand that the circuitry and mobile station recited in the claims and described in the specification, would have sufficiently definite meaning as the name for a structure. Similar to the court's conclusion in *VR Optics, LLC v. Peloton Interactive, Inc.*, the placement of "mobile station" including circuitry alongside and in the same format as these other structural terms highlights that the patents are using the terms to connote a known structure rather than as a nonce substitute for the word "means." 345 F. Supp. 3d 394, 410 (S.D.N.Y. 2018).

It is true that when a limitation is a means-plus-function limitation, and the corresponding structure is software, there needs to be an algorithm for the software or else the means-plus-function limitation will be considered indefinite unless the function can be performed by a general purpose computer. *See Function Media, LLC v. Google, Inc.*, 708 F.3d 1310, 1318 (Fed. Cir. 2013) (holding that the corresponding disclosure for a computer-implemented means-plus-function claim is an algorithm). But that authority is not on point because that definiteness analysis is

triggered only where the limitation is a means-plus-function limitation. Accordingly, the Court rejects GM's position, and determines that the phrase is not governed by § 112(f).

2. Court's Construction

For the reasons set forth above, the phrase **"circuitry configured to receive broadcast information to access an orthogonal frequency division multiple access (OFDMA) system . . .,"** the phrase **"circuitry configured to determine a second bandwidth of a second band that is associated with the OFDMA system based upon the broadcast information received in the first band . . .,"** and the phrase **"wherein the mobile station is configured to operate within the plurality of operating channel bandwidths"** are not subject to § 112(f), and will be given their plain and ordinary meaning.

E. '158 Patent

a. "a processing component configured to control an integration time of each sensor"

Disputed Term	IV's Proposal	GM's Proposal
"a processing component configured to control an integration time of each sensor." "a processing component … configured to combine data from the plurality of sensors received to provide an image" "the processing component is configured to determine an integration time of each channel of the plurality of channels"	Not subject to §112(f), not indefinite.	Subject to §112(f); Indefinite.

1. Analysis

The phrase "a processing component configured to control an integration time of each sensor" appears in Claim 1 of the '158 Patent. The phrase "a processing component … configured to combine data from the plurality of sensors received to provide an image" appears in Claim 5 and 9 of the '158 Patent. The phrase "the processing component is configured to determine an

integration time of each channel of the plurality of channels" appears in Claim 9 of the '158 Patent. The parties dispute whether the phrases are subject to § 112(f).[30]

GM contends that the term "processing component configured to" is subject to construction under § 112(f). GM argues that the "processing component" language fails to recite sufficiently definite structure, and is purely functional. According to GM, the "processing component" claim language is indefinite, because the specification contains no algorithm that indicates how a "processor" or "controller" is programmed to turn it into a special purpose computer for performing the claimed controlling integration time or combining data functions.

Claims 1, 5, and 9 do not recite the word "means," and GM has not overcome the rebuttable presumption that § 112(f) does not apply. Therefore, the analysis proceeds in two steps. First, the Court must determine whether the phrase is in means-plus-function form pursuant to 35 U.S.C. § 112(f). *See Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1097 (Fed. Cir. 2014). If the Court determines that the phrase recites a means-plus-function limitation, then the Court proceeds to the next step and attempts "to construe the disputed claim term by identifying the corresponding structure, material, or acts described in the specification to which the term will be limited." *Id.*

The context of the claim confirms the structural nature of the claimed "processing component." A POSITA would understand the claimed "processing component" to refer to computer circuitry and programming for processing data to perform operations. In the context of claims, the "processing component" must be configured "to control an integration time of each sensor" (Claim 1), "to combine data from the plurality of sensors received to provide an image"

---

[30] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 62-64); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 54-58); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 36-37); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 32).

(Claim 5), or "to determine an integration time of each channel of the plurality of channels" and "to combine data from the plurality of channels received to provide an image" (Claim 9). In each instance, the claim indicates to a POSITA the processing component's operations, including the input (1: signals from sensors; 5: data from sensors; 9: signals and data from sensors); the objective (1: controlling integration time; 5: combining data to provide an image; 9: determining integration time and combining data to provide an image); and the output (1: control signals regarding integration time; 5: an image based on the combined data; 9: integration time determination and an image based on combined data).

These control signals, image-based data are depicted in Figure 4 as the integration time controller (Element 300), image processor (Element 270) as well as many other embodiments in Figure 5. Additionally, Figures 20A, 20B, 20C, 20D up to Figure 21, depict different types of processing components that issue control signals. Therefore, A POSITA will understand what processing component is used in Claims 1, 5, and 11.

Indeed, courts have found similar claim terms to have sufficiently definite structure when coupled with operational context. *See, e.g., Samsung Elecs. Am., Inc. v. Prisua Eng'g Corp.*, 948 F.3d 1342, 1353-54 (Fed. Cir. 2020) ("digital processing unit" not governed by § 112, ¶ 6 and not indefinite); *Zeroclick*, 891 F.3d at 1008 ("program that can [perform function]" found to have sufficiently definite structure in part because the claims provided operational context for the program); *Huawei Techs. Co. v. Verizon Communs.*, No. 2:20-cv-00030-JRG, 2021 U.S. Dist. LEXIS 7944, at *40 (E.D. Tex. Jan. 15, 2021) ("processing unit" and "processing module" not governed by § 112, ¶ 6 and not indefinite); *CXT Sys. v. Acad., Ltd.*, No. 2:18-cv-00171-RWS-RSP, 2019 U.S. Dist. LEXIS 151714, at *42 (E.D. Tex. Sep. 5, 2019) ("processing module for processing" not governed by § 112, ¶ 6 and not indefinite).

The specification further supports this understanding of the claim terms. The specification includes an exemplary embodiment of a processor:
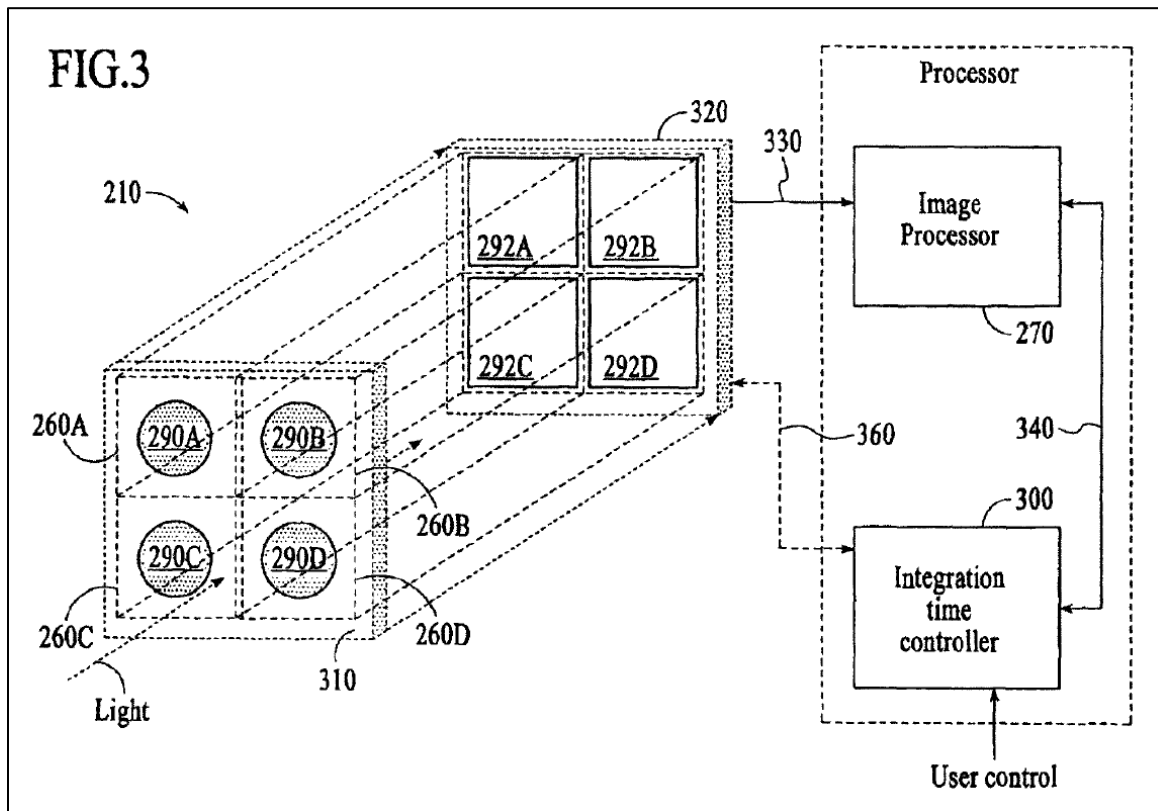
'158 Patent at Figure 3. Regarding Figure 3, the specification states the following:

> FIG. 3 is a block diagram of a digital camera subsystem 210, under an embodiment. As described above, the subsystem 210 includes one or more camera channels. The digital camera subsystem 210 for example is a four channel signal integration time control system (e.g., four camera channels 260A-260D), but the embodiment is not limited to four channels and can include any number of camera channels. Each of the camera channels 260A-260D includes an optics component or portion and a sensor component or portion. The optics component can have different optical f-number among the included camera channels but is not so limited. For example, camera channel 260A includes an optics portion 290A and a sensor portion 292A. Camera channel B includes an optics portion 290B and a sensor portion 292B. Camera channel C includes an optics portion 290C and a sensor portion 292C. Camera channel D includes an optics portion 290D and a sensor portion 292D. The optics portions of the one or more camera channels are collectively referred to herein as an optics subsystem. The sensor portions of the one or

more camera channels are collectively referred to herein as a sensor subsystem. Each camera channel has a selectable integration, and the integration time setting between channels is selected to cover a range of incident light level onto the digital camera.

…

The digital camera subsystem 210 further includes a processor. The processor includes an image processor portion 270 (referred to as image processor 270) and an integration time controller portion 300 (referred to as controller 300). The controller is a component of the variable integration time that provides integration time control for each of the camera channels. The processor 270 is coupled or connected to the one or more sensor portions (e.g., sensor portions 292A-292D) via one or more communication couplings or links, represented by a signal line 330. A communication link may be any kind of communication link including but not limited to, for example, wired (e.g., conductors, fiber optic cables) links, wireless links (e.g., acoustic links, electromagnetic links, and/or any combination of links including but not limited to microwave links, satellite links, infrared links), and/or combinations of wired and/or wireless links.

'158 Patent at 7:17–8:47. As indicated, the specification explains that "[t]he digital camera subsystem 210 further includes a processor. The processor includes an image processor portion 270 (referred to as image processor 270) and an integration time controller portion 300 (referred to as controller 300). The controller is a component of the variable integration time that provides integration time control for each of the camera channels." *Id.* at 8:32–38. The specification further states: "The processor 270 is coupled or connected to the one or more sensor portions (e.g., sensor portions 292A-292D) via one or more communication couplings or links, represented by a signal line 330." *Id.* at 8:38–47. The specification then provides a detailed explanation of the operation of the digital camera subsystem, including the role of the processor, how integration times are configured, and how data is combined to form images for the embodiment of Figure 3 (*id.* at 8:48–9:62), as well as the embodiments of Figures 4-6 (*id.* at 9:63–11:18).

Referring to Figure 7, the specification further details the steps involved in forming images

using the processor's image processor (270) and integration time controller (300). *Id.* at 11:19–43. The specification discloses numerous additional embodiments of processing components for controlling and determining integration times and combining data to form images. *Id.* at 11:57–12:27, 12:41–17:40, 21:35–22:62, 22:63–23:10.

A POSITA would understand that the processing components illustrated in the figures, and recited in the claims and described in the specification, would have sufficiently definite meaning as the name for a structure. Similar to the court's conclusion in *VR Optics, LLC v. Peloton Interactive, Inc.*, the placement of "processor" alongside and in the same format as these other structural terms highlights that the patents are using the term processor to connote a known structure rather than as a nonce substitute for the word "means." 345 F. Supp. 3d 394, 410 (S.D.N.Y. 2018).

It is true that when a limitation is a means-plus-function limitation, and the corresponding structure is software, there needs to be an algorithm for the software or else the means-plus-function limitation will be considered indefinite unless the function can be performed by a general purpose computer. *See Function Media, LLC v. Google, Inc.*, 708 F.3d 1310, 1318 (Fed. Cir. 2013) (holding that the corresponding disclosure for a computer-implemented means-plus-function claim is an algorithm). But that authority is not on point because that definiteness analysis is triggered only where the limitation is a means-plus-function limitation. Accordingly, the Court rejects GM's position, and determines that the phrase is not governed by § 112(f).

2. Court's Construction

For the reasons set forth above, the phrase **"a processing component configured to control an integration time of each sensor;"** the phrase **"a processing component … configured to combine data from the plurality of sensors received to provide an image;"** and

the phrase **"the processing component is configured to determine an integration time of each channel of the plurality of channels"** is not subject to § 112(f), and will be given their plain and ordinary meaning.

F. '475 Patent

a. "processing module configured to determine, while the device is in the vehicle, that the vehicle committed a violation based on the information about the vehicle"

Disputed Term	IV's Proposal	GM's Proposal
"processing module configured to determine, while the device is in the vehicle, that the vehicle committed a violation based on the information about the vehicle"	Not subject to §112(f), not indefinite.	Subject to §112(f); **Function:** Determining whether a vehicle committed a violation based on the information about the vehicle **Structure:** The "step-by-step procedure of the processing module's operation" set forth at pages 53-56 of IV's response brief, including '475 Patent, 2:23- 34, 3:1-5, 3:56-4:8, 4:21-38, 5:12-51, 6:6-49, 7:28-8:39, 9:4-10:37.

1. Analysis

The phrase "processing module configured to determine, while the device is in the vehicle, that the vehicle committed a violation based on the information about the vehicle" appears in Claim 15 of the '475 Patent. The parties dispute whether the phrase is subject to § 112(f).[31] GM contends that the "processing module" language in Claim 15 of the '475 Patent is indefinite for similar reasons expressed above for the "local content module" language in Claim 4 of the '771 Patent. GM argues that the claim language is purely functional, and the addition of the introductory

---

[31] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 64-67); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 58-63); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 37-38); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 33).

phrase "processing module" does nothing to change the functional nature of the phrase. GM contends that the term "module" is a well-known nonce word that often functions as a substitute for "means" in the context of § 112(f). (47 at 65) (citing *Williamson*, 792 F.3d at 1350). According to GM, the specification uses the term "module" generically to describe a variety of different "modules" for performing different functions. GM argues "processing module" claim language fails to recite sufficient structure to perform the recited "determining" function, and is subject to construction under § 112(f). GM contends that the "processing module" claim language is indefinite, because the '475 Patent fails to include an algorithm for performing the claimed function.

Claim 15 does not recite the word "means," and GM has not overcome the rebuttable presumption that § 112(f) does not apply. Contrary to GM's suggestion, "*Williamson* does not … stand for the broad proposition that the term 'module' automatically places it among terms such as 'means' and 'step for,' thus triggering a presumption that § 112(f) applies." *Blast Motion, Inc. v. Zepp Labs, Inc.*, No. 15-CV-700 JLS (NLS), 2017 U.S. Dist. LEXIS 16549, at *54 (S.D. Cal. Feb. 6, 2017) (holding that "data storage module" is not a means-plus-function term).

Therefore, the analysis proceeds in two steps. First, the Court must determine whether the phrase is in means-plus-function form pursuant to 35 U.S.C. § 112(f). *See Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1097 (Fed. Cir. 2014). If the Court determines that the phrase recites a means-plus-function limitation, then the Court proceeds to the next step and attempts "to construe the disputed claim term by identifying the corresponding structure, material, or acts described in the specification to which the term will be limited." *Id.*

The context of the claim confirms the structural nature of the claimed "processing module." Claim 15 of the '475 Patent recites "[a] device for notifying a recipient of a violation by a driver

of a vehicle, the device comprising: an information module configured to determine, while the device is located within a vehicle, information about the vehicle; a processing module configured to determine, while the device is in the vehicle, that the vehicle committed a violation based on the information about the vehicle; and a transmission module configured to send, to a remote computing system while the device is located within the vehicle, an indication of the violation….” Like with the term “processing component,” a POSITA would understand the “processing module” in Claim 15 to refer to computer circuitry and programming for processing data to perform operations.

Figure 2 depicts element 120 as the computing processing module. Claim 15 identifies the processing module’s operations to a POSITA, including its input (information about the vehicle from the information module), its operation (determining whether the vehicle committed a violation), and its output (a determination that a violation occurred, to be sent by the transmission module to a remote computer system). Figure 6 shows an example of a variation, when a measured speed is higher than a speed limit (Element 610) even adding an offset value to allow a wiggle room in terms of surpassing a speed limit.

A POSITA will understand that the algorithm found in Figure 6 requires circuity and a processing unit to determine average speed, which requires sampling at multiple times and dividing by the number of samples. Claim 15 therefore connotes sufficient structure to a POSITA. *Huawei Techs. Co. v. Verizon Communs.*, No. 2:20-cv-00030-JRG, 2021 U.S. Dist. LEXIS 7944, at *40 (E.D. Tex. Jan. 15, 2021) (“processing unit” and “processing module” not governed by § 112, ¶ 6 and not indefinite); *CXT Sys. v. Acad., Ltd.*, No. 2:18-cv-00171-RWS-RSP, 2019 U.S. Dist. LEXIS 151714, at *42 (E.D. Tex. Sep. 5, 2019) (“processing module for processing” not governed by § 112, ¶ 6 and not indefinite).

The specification further supports this understanding of this disputed phrase. The specification includes an exemplary embodiment of a processing module:
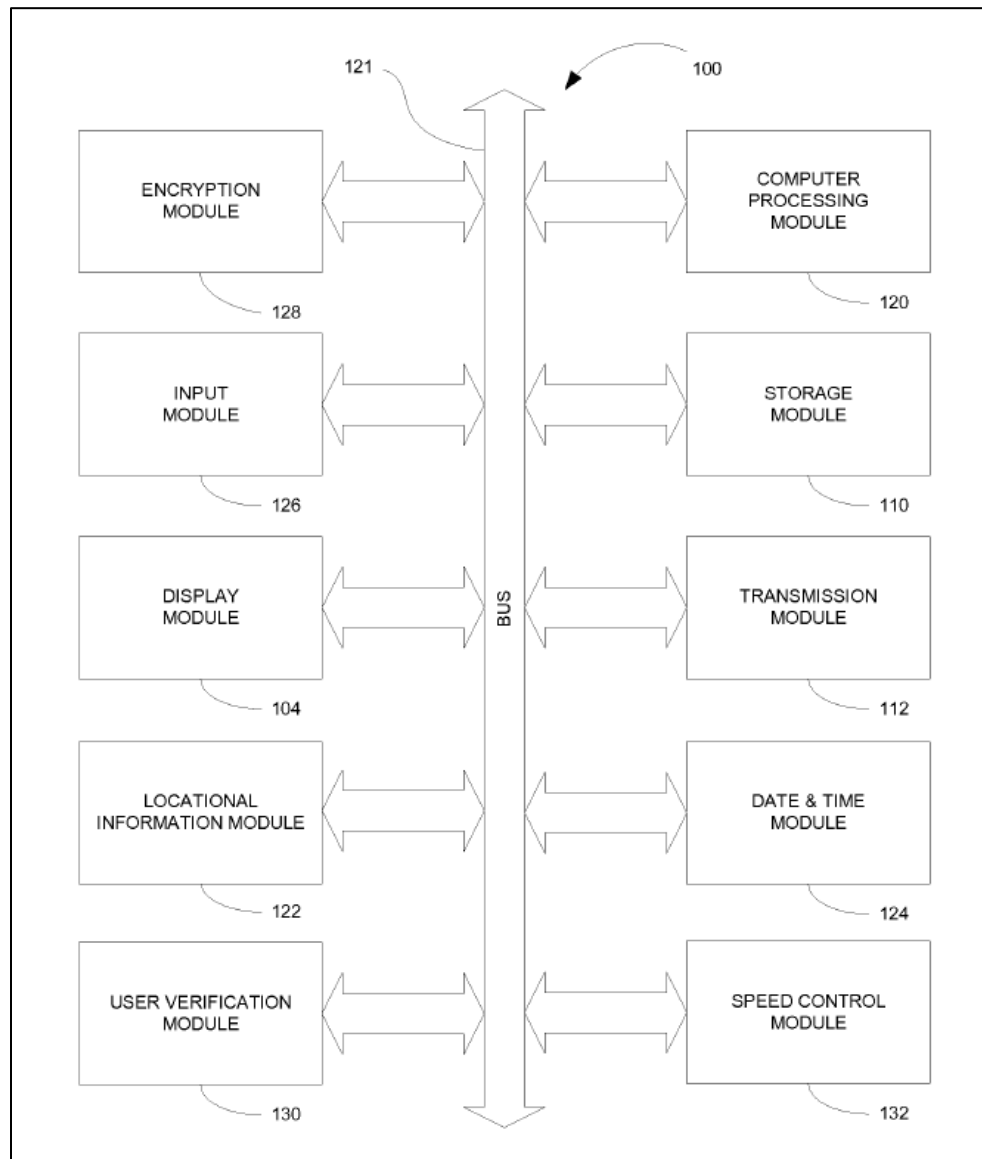
'475 Patent at Figure 2. Regarding Figure 2, the specification states the following:

> Referring to FIG. 2, the various components of the device 100 will now be described. The device will contain a computer processing module 120, e.g., a microprocessor. The computer processing module 120 will use computer software instructions that have been programmed into the module and conventional computer processing power to interact and organize the traffic flow between the various other modules. It is to be understood that the present disclosure may be implemented in various forms of hardware, software, firmware,

> special purpose processors, or a combination thereof. A system bus 121 couples the various components shown in FIG. 2 and may be any of several types of bus structures, including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. The device also includes an operating system and micro instruction code preferably residing in read only memory (ROM). The various processes and functions described herein may either be part of the micro instruction code or part of an application program (or a combination thereof) which is executed via the operating system.

Id. at 3:56–4:9. As indicated, the specification states that "the device will contain a computer processing module 120, e.g., a microprocessor" that "will use computer software instructions that have been programmed into the module and conventional computer processing power to interact and organize the traffic flow between the various other modules." *Id.* at 3:57–62. The specification further states that "it is to be understood that the present disclosure may be implemented in various forms of hardware, software, firmware, special purpose processors, or a combination thereof." *Id.* at 3:62–65. The processing module interacts with the device's other modules through "[a] system bus 121[,] [which] couples the various components shown in FIG. 2 and may be any of several types of bus structures, including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures," as well as "an operating system and micro instruction code preferably residing in read only memory (ROM)." *Id.* at 3:66–4:8.

As for the processing module's vehicle information input, the specification states that the device's "locational information module 122 [including, e.g., a GPS receiver and antenna] will be provided for determining a location of the device 100 and/or user[] … [and to] calculate routes traveled, velocity, or speed of a vehicle including the device 100, etc., or alternatively, … send the position coordinates to the processing module 120 at a predetermined sampling period where the processing module will perform the calculations." *Id.* at 4:21–38.

In addition, a "storage module 110 will store various types of information such as the

inputted destination addresses, routes traveled by the user, the user's home address, etc." as well as "a plurality of geographical maps." *Id.* at 5:12–23. "In operation, the processing module 120 will process information received from overhead satellites and calculate the geographic location that the device 100 is currently at… [and] then plot[] that location on a graphic representation of a map [that is] stored in the storage module 110, e.g., internal or external memory … and then displayed on the display module 104 of the device 100." *Id.* at 5:23–39.

Furthermore, "processing module 120 will determine based on the information received from the locational information module 122 that a map corresponding to the devices current position is not available and the processing module 120 will request an appropriate map from a service provider available on a communication network accessed via the transmission module 112." *Id.* at 5:45–51; *see also id.* at 6:6–36 (describing processing module's operation using encryption), 6:37–49 (describing processing module's operation using hardware interlock).

The specification further includes a flow chart of in Figure 3:

FIG. 3
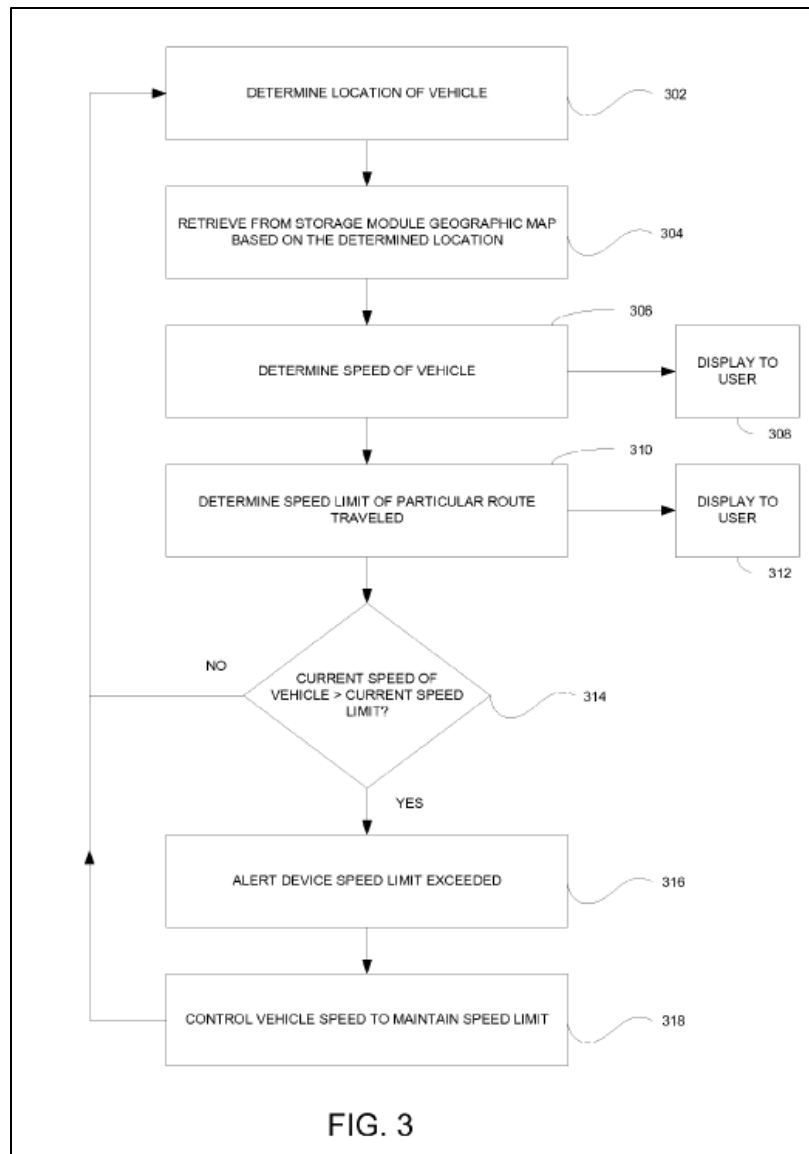
Id. at Figure 3. Regarding Figure 3, the specification further describes how "the device will obtain location information … to allow the processing module 120 to determine the device's specific location (step 302)" (*id.* at 7:28–41); "determine a speed of the vehicle (step 306)" (*id.* at 7:42–50); "determine the speed limit for the particular route traveled (step 310)" (*id.* at 7:51–58); "compare the determined speed limit to the current rate of speed of the vehicle, and … generate an alert if the user is moving the vehicle in excess of the posted limit" (*id.* at 7:59–8:33); and "correlate a time and date to a particular location and the user's speed at that location" (*id.* at 8:34–

39).

The specification further includes Figure 5:

FIG. 5
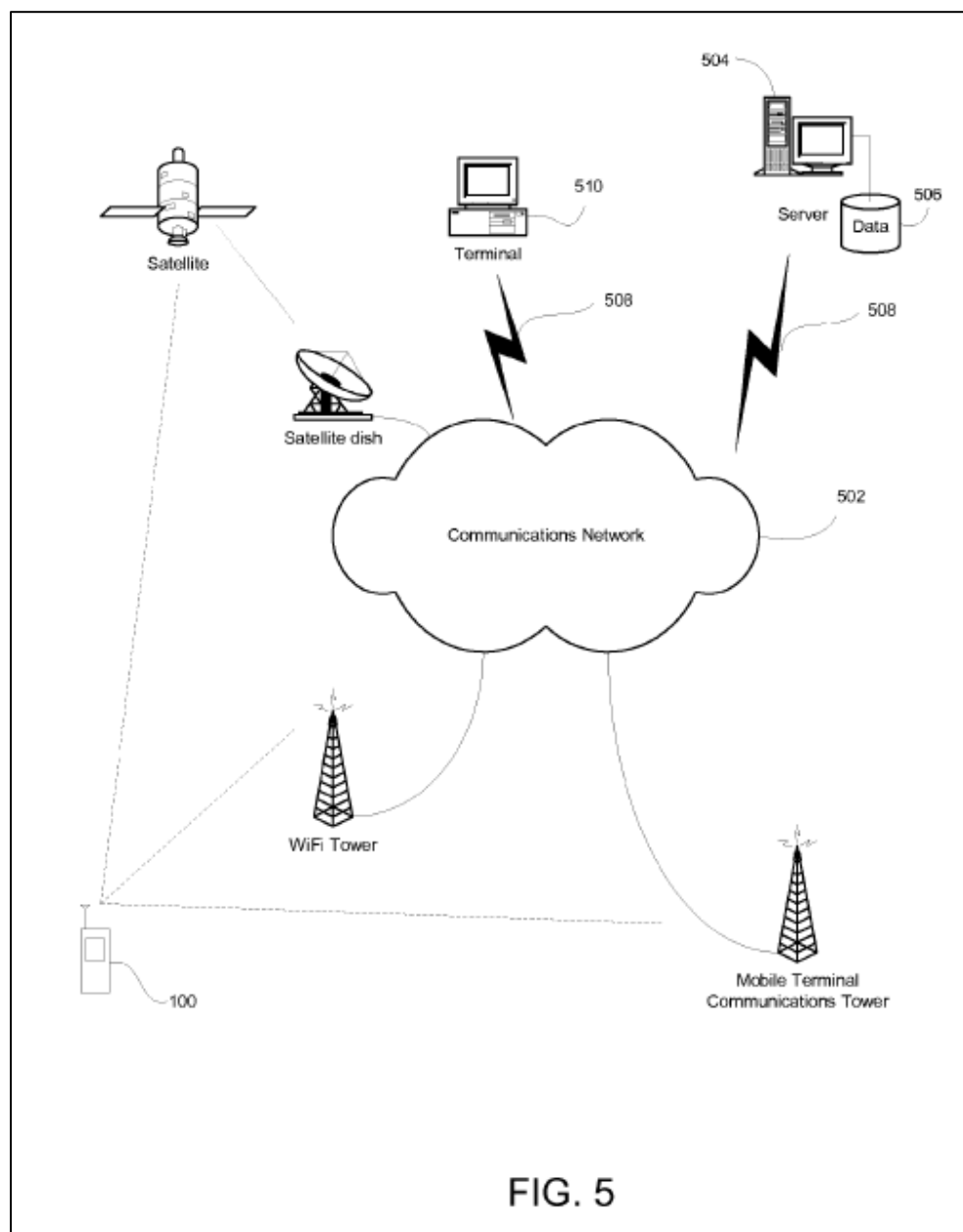
Id. at Figure 5. Regarding Figure 5, the specification further describes the transmission of the vehicle information to a remote computer server "once the processing module 120 has determined the speed that the subject vehicle is traveling at, the location of that vehicle and the time and date of the speed reading" (*id.* at 9:4–34, 10:15–37), and the remote computer server's generation of

an alert or other information based on that information (*id.* at 9:35–10:14).

A POSITA would understand that processing module recited in the claims and described in the specification, would have sufficiently definite meaning as the name for a structure. Similar to the court's conclusion in *VR Optics, LLC v. Peloton Interactive, Inc.*, the placement of "processing module" alongside and in the same format as these other structural terms highlights that the patents are using the term processor to connote a known structure rather than as a nonce substitute for the word "means." 345 F. Supp. 3d 394, 410 (S.D.N.Y. 2018).

It is true that when a limitation is a means-plus-function limitation, and the corresponding structure is software, there needs to be an algorithm for the software or else the means-plus-function limitation will be considered indefinite unless the function can be performed by a general purpose computer. *See Function Media, LLC v. Google, Inc.*, 708 F.3d 1310, 1318 (Fed. Cir. 2013) (holding that the corresponding disclosure for a computer-implemented means-plus-function claim is an algorithm). But that authority is not on point because that definiteness analysis is triggered only where the limitation is a means-plus-function limitation. Accordingly, the Court rejects GM's position, and determines that the phrase is not governed by § 112(f).

2. Court's Construction

For the reasons set forth above, the phrase **"processing module configured to determine, while the device is in the vehicle, that the vehicle committed a violation based on the information about the vehicle"** is not subject to § 112(f), and will be given its plain and ordinary meaning.

G. '628 Patent

a. "processor is configured to:…detect a movement of a door latch of a vehicle"

Disputed Term	IV's Proposal	GM's Proposal
"processor is configured to:…detect a movement of a door latch of a vehicle" "processor is configured to:…attempt to detect a wireless key fob configured to provide digital authorization for an attempted access event"	Not subject to §112(f), not indefinite.	Subject to §112(f); Indefinite.

1. Analysis

The phrase "processor is configured to:…detect a movement of a door latch of a vehicle," and the phrase "processor is configured to:…attempt to detect a wireless key fob configured to provide digital authorization for an attempted access event" appears in Claim 1 of the '628 Patent. The parties dispute whether the phrase is subject to § 112(f).[32]

GM contends that the term "processor is configured to" is subject to construction under § 112(f). GM argues that the "processor" language in Claim 1 does not recite sufficient structure for performing the claimed function. According to GM, the "processor is configured to" claim language is indefinite, because the specification contains no algorithm for performing the claimed function.

Claim 1 does not recite the word "means," and GM has not overcome the rebuttable presumption that § 112(f) does not apply. Therefore, the analysis proceeds in two steps. First, the Court must determine whether the phrase is in means-plus-function form pursuant to 35 U.S.C. § 112(f). *See Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1097 (Fed. Cir. 2014). If the Court determines that the phrase recites a means-plus-function limitation, then the Court proceeds to the next step and attempts "to construe the disputed claim term by identifying the corresponding

---

[32] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 67-68); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 63-66); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 38-39); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 33-34).

structure, material, or acts described in the specification to which the term will be limited." *Id.*

The context of the claim confirms the structural nature of the claimed "processor." Claim 1 is directed to a "video recorder," identifies components with which the processer interacts ("a buffer … and a memory device in communication with the processor"), and describes the ways in which the processor is configured to operate, including its inputs and outputs: "store video data in the buffer; detect a movement of a door latch of a vehicle; attempt to detect a wireless key fob …; and transfer at least a portion of the video data from the buffer to the memory device if and only if the wireless key fob has not been detected." The recited processor is the only circuity that can detect a movement of a latch by a series of samples of data, *e.g.* sensor.

A POSITA would understand the claimed "processor" to refer to a class of structures well-known in the art. Indeed, "'processor' is not a 'nonce' term but rather connotes a class of structures." *Cellular Communs. Equip. LLC v. AT&T, Inc.*, No. 2:15-CV-576-RWS-RSP, 2016 U.S. Dist. LEXIS 174666, at *96 (E.D. Tex. Dec. 18, 2016) (internal citation omitted). "A 'processor' in the computer arts is commonly understood to refer to the component of a computer that executes software instructions and performs computations." *Typemock, Ltd. v. Telerik, Inc.*, No. 17-10274-RGS, 2018 U.S. Dist. LEXIS 149110, at *16 (D. Mass. Aug. 31, 2018). "[A]s … courts have noted, a processor generally refers to a tangible object that can be purchased and that can perform certain functions even without specific instructions. Thus, unlike terms such as 'means,' 'element,' and 'device' that typically do not connote structure, 'processor' can on its own recite at least some structure to persons of ordinary skill in the art." *Fisher-Rosemount Sys. v. ABB Ltd.*, No. 4:18-CV-00178, 2019 U.S. Dist. LEXIS 214507, at *50 (S.D. Tex. Dec. 12, 2019) (internal citation omitted). "The term processor is 'not used as generic terms or black box recitations of structure or abstractions, but rather as [a] specific reference' to processors that are

known in the art." *Id.* at *52 (quoting *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1008 (Fed. Cir. 2018)).

Moreover, by reciting the objectives of the "processor," and how processor operates within the context of the claimed invention, the claim language connotes sufficiently definite structure to one of skill in the art. *See, e.g., Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1319-21 (Fed. Cir. 2004) (finding "circuit [for performing a function]" to be sufficiently definite structure because the claim recited the "objectives and operations" of the circuit); *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1295, 1301 (Fed. Cir. 2014) (finding "heuristic [for performing a function]" to be sufficiently definite structure because the patent described the operation and objectives of the heuristic); *Collaborative Agreements, LLC v. Adobe Sys.*, No. 15-cv-03853-EMC, 2015 U.S. Dist. LEXIS 161809, at *11-*24 (N.D. Cal. Dec. 2, 2015) (determining "code segment [for performing a function]" to be sufficiently definite structure because the claim described the operation of the code segment); *Finjan, Inc. v. Proofpoint, Inc.*, No. 13-cv-05808-HSG, 2015 U.S. Dist. LEXIS 162504, at *31-*32 (N.D. Cal. Dec. 3, 2015) (determining "processor [for performing a function]" to be sufficiently definite structure because the claim described how the processor functions with the other claim components). Claim 1 connotes sufficient structure about the claimed "processor."

The specification further supports this understanding of the disputed term. The specification includes an exemplary embodiment of processor 12:
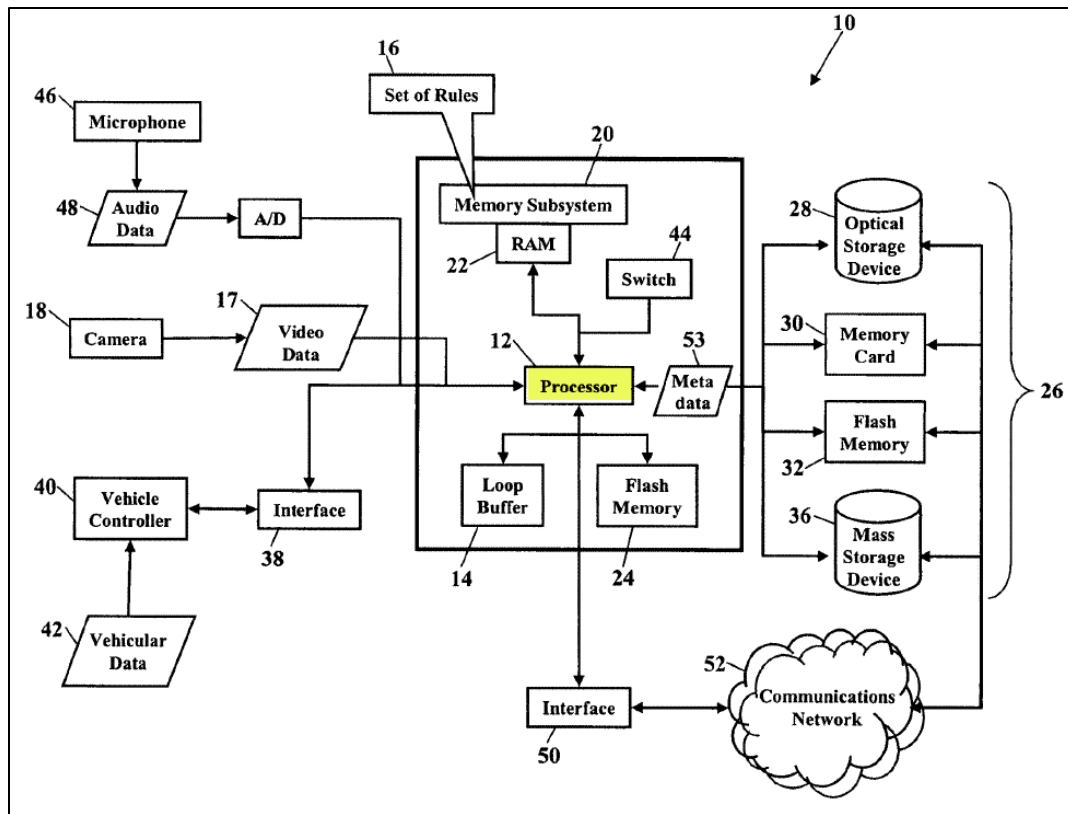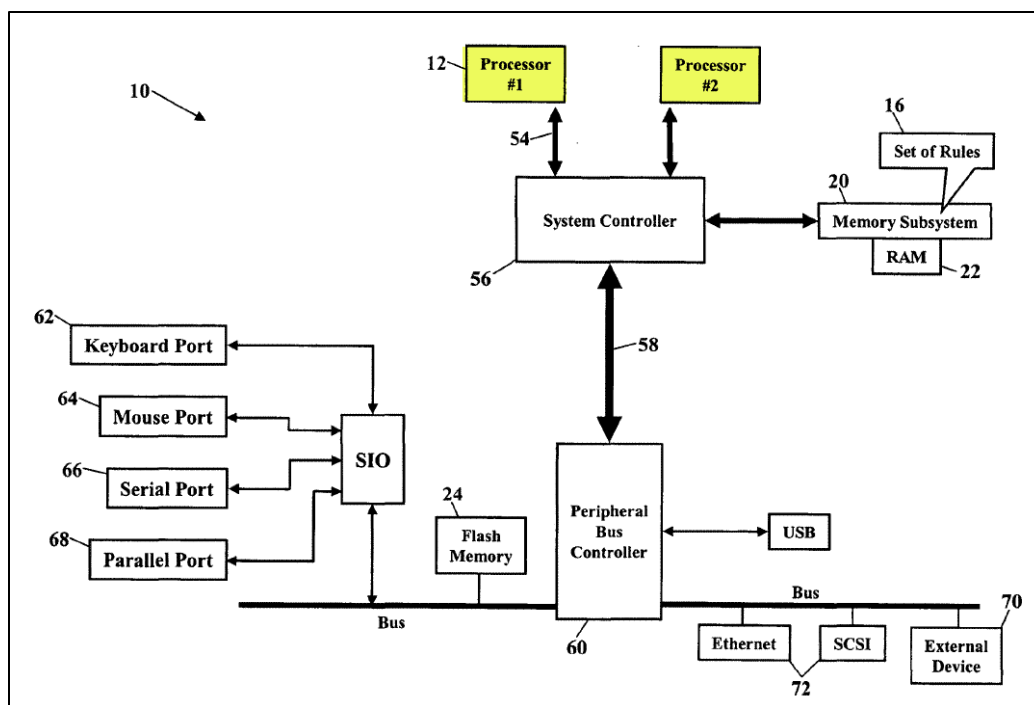
'628 Patent at Figure 1. Regarding Figure 1, the specification states the following:

> FIG. 1 is a simplified componentry schematic of the video recorder 10. The video recorder 10 includes at least one processor 12, a loop buffer 14, and a set 16 of rules. The video recorder 10 stores video data 17 of an event captured by at least one camera 18. The video data 17 includes a series of picture frames. When this series of picture frames are sequentially reviewed, the video data 17 resembles a motion picture of the event. The video recorder 10 stores the video data 17 in one or more memory devices. The memory devices include a memory subsystem 20 (such as RAM memory 22), flash memory 24, and/or a peripheral storage device 26. The peripheral storage device 26 could include an optical storage device 28, a memory card 30, a removable flash memory storage device 32, or a mass-storage device 36. The peripheral storage device 26 could also include a magnetic storage device (not shown) for storing the video data of the event. As the at least one camera 18 captures and sends video data 17 of the event, the video recorder 10 stores the frames of the video data 17 in one or more of the memory devices.

Id. at 4:10–29. As indicated, the specification states that "[t]he set 16 of rules specifies the

conditions, events, errors, or signals that trigger a transfer of the contents of the loop buffer 14."
Id. at 6:59–62. In that regard, "[w]hen the set 16 of rules triggers a transfer of the contents of the
loop buffer 14, the video data may be useful in identifying a thief, determining fault in an accident,
or documenting a component failure." *Id.* at 6:62–65. For example, "[t]he vehicle controller 40 …
may detect movement of a door latch[,] [which,] [i]f … not accompanied by digital authorization
from a wireless key fob, the … may indicate an attempted vehicle theft." *Id.* at 6:65–7:2. In that
situation, "[t]he set 16 of rules, then, could specify that when door latch movement is detected, yet
unaccompanied by digital authorization from a wireless key fob, the contents of the loop buffer 14
should be transferred to a more permanent memory device (e.g., 20, 22, 24, 26, 28, 30, 32, and/or
36)." *Id.* at 7:2–8. The specification's details about the processor's recited operation in relation to
the other claimed components of the video recorder would inform a POSITA about the processor's
structure.

The specification further includes an exemplary embodiment of processor 12 in Figure 2:

Id. at Figure 2. . Regarding Figure 2, the specification states the following:

> FIG. 2 is a more detailed schematic of the video recorder 10. The video recorder 10 includes the one or more processors 12 executing an operating system. The operating system, as is well known, has a set of instructions that control the internal functions of the processors 12 and of other components. A system bus 54 communicates signals, such as data signals, control signals, and address signals, between the processor 12 and a system controller 56 (typically called a "Northbridge"). The system controller 56 provides a bridging function between the one or more processors 12, the memory subsystem 20, and a PCI (Peripheral Controller Interface) bus 58. The PCI bus 58 is controlled by a Peripheral Bus Controller 60. The Peripheral Bus Controller 60 (typically called a "Southbridge") is an integrated circuit that serves as an input/output hub for various peripheral ports. These peripheral ports could include, for example, a keyboard port 62, a mouse port 64, a serial port 66 and/or a parallel port 68 for a video display unit, one or more external device ports 70, and networking ports 72 (such as SCSI or Ethernet). Those of ordinary skill in the art understand that the program, processes, methods, and systems described in this patent are not limited to any particular computer system or computer hardware.

> Those of ordinary skill in the art also understand the at least one processor 12 is typically a microprocessor. Advanced Micro

Devices, Inc., for example, manufactures a full line of ATHLON™ microprocessors (ATHLON™ is a trademark of Advanced Micro Devices, Inc., One AMD Place, P.O. Box 3453, Sunnyvale, Calif. 94088-3453, 408.732.2400, 800.538.8450, www.amd.com). The Intel Corporation also manufactures a family of X86 and P86 microprocessors (Intel Corporation, 2200 Mission College Blvd., Santa Clara, Calif. 95052-8119, 408.765.8080, www.intel.com). Other manufacturers also offer microprocessors. Such other manufacturers include Motorola, Inc. (1303 East Algonquin Road, P.O. Box A3309 Schaumburg, Ill. 60196, www.Motorola.com), International Business Machines Corp. (New Orchard Road, Armonk, N.Y. 10504, (914) 499-1900, www.ibm.com), and Transmeta Corp. (3940 Freedom Circle, Santa Clara, Calif. 95054, www.transmeta.com). Those skilled in the art further understand that the program, processes, methods, and systems described in this patent are not limited to any particular manufacturer's central processor.

Id. at 8:24–67. The specification explains that "[t]he video recorder 10 includes the one or more processors 12 executing an operating system[,] … [which] as is well known, has a set of instructions that control the internal functions of the processors 12 and of other components." *Id.* at 8:24–29; *see also id.* at 9:1–19 (providing examples of such operating systems). The specification states that the "system bus 54 communicates signals, such as data signals, control signals, and address signals, between the processor 12 and a system controller 56[,] … [which] provides a bridging function between the one or more processors 12, the memory subsystem 20, and a PCI (Peripheral Controller Interface) bus 58." *Id.* at 8:29–35.

The specification further indicates that "those of ordinary skill in the art also understand the at least one processor 12 is typically a microprocessor" and provides a number of examples of microprocessors. *Id.* at 8:47–67. In describing Figure 4's flowchart of the steps involved in recording video data, the specification provides details about the process of storing video data in the loop buffer, applying a set of rules to transfer the contents of the loop buffer to the memory, and transferring data to memory—all processes for which the claimed processor must be configured. *Id.* at 10:24–11:3.

A POSITA would understand that devices like the one illustrated in Figures 1 and 2, and recited in the claims and described in the specification, would have sufficiently definite meaning as the name for a structure. Similar to the court's conclusion in *VR Optics, LLC v. Peloton Interactive, Inc.*, the placement of "processor" alongside and in the same format as these other structural terms highlights that the patents are using the term processor to connote a known structure rather than as a nonce substitute for the word "means." 345 F. Supp. 3d 394, 410 (S.D.N.Y. 2018).

It is true that when a limitation is a means-plus-function limitation, and the corresponding structure is software, there needs to be an algorithm for the software or else the means-plus-function limitation will be considered indefinite unless the function can be performed by a general purpose computer. *See Function Media, LLC v. Google, Inc.*, 708 F.3d 1310, 1318 (Fed. Cir. 2013) (holding that the corresponding disclosure for a computer-implemented means-plus-function claim is an algorithm). But that authority is not on point because that definiteness analysis is triggered only where the limitation is a means-plus-function limitation. Accordingly, the Court rejects GM's position, and determines that the phrase is not governed by § 112(f).

2. Court's Construction

For the reasons set forth above, the phrase **"processor is configured to:…detect a movement of a door latch of a vehicle,"** and the phrase **"processor is configured to:…attempt to detect a wireless key fob configured to provide digital authorization for an attempted access event"** are not subject to § 112(f), and will be given their plain and ordinary meaning.

H. '138 Patent

a. "processor is configured to . . ."

Disputed Term	IV's Proposal	GM's Proposal
"processor configured to cause the circuitry to receive parameters associated with a plurality of radio bearers, determine a plurality of buffer occupancies, wherein each of the plurality of buffer occupancies is associated with one or more radio bearers of the plurality of radio bearers, cause the transmitter to transmit a message including the plurality of buffer occupancies to a network, cause the circuitry to receive a single allocation of uplink resources, select data from the plurality of radio bearers for transmission using the single allocation of uplink resources, wherein the selection of the data occurs using a first iteration and a second iteration, wherein in the first iteration, the selection of the data is selected from a subset of the plurality of radio bearers based on the received parameters, wherein in the second iteration, the selection of the data is based on buffered data for respective radio bearers, and cause the transmitter to transmit a signal including the selected data."	Not subject to §112(f), not indefinite.	Subject to §112(f); Indefinite.

1. Analysis

The phrase "processor configured to cause the circuitry to receive parameters associated

with a plurality of radio bearers, determine a plurality of buffer occupancies, wherein each of the

plurality of buffer occupancies is associated with one or more radio bearers of the plurality of radio

bearers, cause the transmitter to transmit a message including the plurality of buffer occupancies

to a network, cause the circuitry to receive a single allocation of uplink resources, select data from

the plurality of radio bearers for transmission using the single allocation of uplink resources,

wherein the selection of the data occurs using a first iteration and a second iteration, wherein in

the first iteration, the selection of the data is selected from a subset of the plurality of radio bearers

based on the received parameters, wherein in the second iteration, the selection of the data is based

on buffered data for respective radio bearers, and cause the transmitter to transmit a signal including the selected data" appears in Claim 1 of the '138 Patent. The parties dispute whether the phrase is subject to § 112(f).[33]

GM contends that the term "processor is configured to" is subject to construction under § 112(f). GM argues that the "processor" language in Claim 1 does not recite sufficient structure for performing the claimed function. According to GM, the "processor is configured to" claim language is indefinite, because the specification contains no algorithm for performing the claimed function.

Claim 1 does not recite the word "means," and GM has not overcome the rebuttable presumption that § 112(f) does not apply. Therefore, the analysis proceeds in two steps. First, the Court must determine whether the phrase is in means-plus-function form pursuant to 35 U.S.C. § 112(f). *See Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1097 (Fed. Cir. 2014). If the Court determines that the phrase recites a means-plus-function limitation, then the Court proceeds to the next step and attempts "to construe the disputed claim term by identifying the corresponding structure, material, or acts described in the specification to which the term will be limited." *Id.*

The context of the claim confirms the structural nature of the claimed "processor." Claim 1 is directed to a "user equipment (UE) comprising: a processor communicatively coupled to a transmitter and circuitry configured to receive," wherein the processor has a series of recited configurations. The claim's recited configurations for the processor connote sufficient structure for the processor, describing how the processor will interact with the transmitter and circuitry to

---

[33] The parties' arguments for this disputed term/phrase can be found in Defendant's Opening Claim Construction Brief (Dkt. No. 47 at 69-70); Plaintiff's Responsive Claim Construction Brief (Dkt. No. 55 at 66-67); Defendant's Reply Claim Construction Brief (Dkt. No. 56 at 39-40); and Plaintiff's Sur-Reply Claim Construction Brief (Dkt. No. 65 at 34-35).

send or receive a variety of information (parameters, messages, allocations of uplink resources, or data signals) and how the processor will determine a plurality of buffer occupancies associated with one or more radio bearers and select data from the radio bearers based on received parameters or on buffered data for respective radio bearers.

A POSITA would understand the claimed "processor" to refer to a class of structures well-known in the art. Indeed, "'processor' is not a 'nonce' term but rather connotes a class of structures." *Cellular Communs. Equip. LLC v. AT&T, Inc.*, No. 2:15-CV-576-RWS-RSP, 2016 U.S. Dist. LEXIS 174666, at *96 (E.D. Tex. Dec. 18, 2016) (internal citation omitted). "A 'processor' in the computer arts is commonly understood to refer to the component of a computer that executes software instructions and performs computations." *Typemock, Ltd. v. Telerik, Inc.*, No. 17-10274-RGS, 2018 U.S. Dist. LEXIS 149110, at *16 (D. Mass. Aug. 31, 2018). "[A]s … courts have noted, a processor generally refers to a tangible object that can be purchased and that can perform certain functions even without specific instructions. Thus, unlike terms such as 'means,' 'element,' and 'device' that typically do not connote structure, 'processor' can on its own recite at least some structure to persons of ordinary skill in the art." *Fisher-Rosemount Sys. v. ABB Ltd.*, No. 4:18-CV-00178, 2019 U.S. Dist. LEXIS 214507, at *50 (S.D. Tex. Dec. 12, 2019) (internal citation omitted). "The term processor is 'not used as generic terms or black box recitations of structure or abstractions, but rather as [a] specific reference' to processors that are known in the art." *Id.* at *52 (quoting *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1008 (Fed. Cir. 2018)).

Moreover, by reciting the objectives of the "processor," and how the processor operates within the context of the claimed invention, the claim language connotes sufficiently definite structure to one of skill in the art. *See, e.g., Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d

1311, 1319-21 (Fed. Cir. 2004) (finding "circuit [for performing a function]" to be sufficiently definite structure because the claim recited the "objectives and operations" of the circuit); *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1295, 1301 (Fed. Cir. 2014) (finding "heuristic [for performing a function]" to be sufficiently definite structure because the patent described the operation and objectives of the heuristic); *Collaborative Agreements, LLC v. Adobe Sys.*, No. 15-cv-03853-EMC, 2015 U.S. Dist. LEXIS 161809, at *11-*24 (N.D. Cal. Dec. 2, 2015) (determining "code segment [for performing a function]" to be sufficiently definite structure because the claim described the operation of the code segment); *Finjan, Inc. v. Proofpoint, Inc.*, No. 13-cv-05808-HSG, 2015 U.S. Dist. LEXIS 162504, at *31-*32 (N.D. Cal. Dec. 3, 2015) (determining "processor [for performing a function]" to be sufficiently definite structure because the claim described how the processor functions with the other claim components). Claim 1 connotes sufficient structure about the claimed "processor."

The specification further supports this understanding of the claim terms. The specification discloses "a wireless communication unit … compris[ing] a signal processor arranged to identify buffer occupancy for individual radio bearers and a transmitter operably coupled to the signal processor and arranged to transmit a message to the radio access network." '138 Patent at 3:65–4:3. The specification also discloses "an apparatus comprising a memory and a processor operably coupled to the memory[,] [with] [p]rogram code … executable on the processor, where the program code is operable for mapping one or more services to individual radio bearers of a plurality of radio bearers; reporting buffer occupancy for the plurality of radio bearers; and prioritizing the allocated resource across multiple wireless communication units on a radio bearer basis." *Id.* at 4:49–57. Furthermore, the "processor" in the claim limitations would be readily understood as a processor (*e.g.*, the processor discussed above) that is optimized for use in wireless

digital communications and wireless networks such as those in compliance with, e.g., technologies related to GSM, TDMA, etc. As one example, a processor in the claim limitations may correspond to the disclosed structure of a signal processor discussed above. *Id.* at 3:65–4:3

The '138 Patent describes embodiments where one or more of the processors cause the circuitry to receive parameters associated with a plurality of radio bearers, determine a plurality of buffer occupancies, wherein each of the plurality of buffer occupancies is associated with one or more radio bearers of the plurality of radio bearers, cause the transmitter to transmit a message including the plurality of buffer occupancies to a network, cause the circuitry to receive a single allocation of uplink resources, select data from the plurality of radio bearers for transmission using the single allocation of uplink resources, wherein the selection of the data occurs using a first iteration and a second iteration. These operation are disclosed, for example, with reference to Figure 6. *Id.* at 10:48–12:28;

A POSITA would understand that device recited in the claims and described in the specification, would have sufficiently definite meaning as the name for a structure. Similar to the court's conclusion in *VR Optics, LLC v. Peloton Interactive, Inc.*, the placement of "processor" alongside and in the same format as these other structural terms highlights that the patents are using the term processor to connote a known structure rather than as a nonce substitute for the word "means." 345 F. Supp. 3d 394, 410 (S.D.N.Y. 2018).

It is true that when a limitation is a means-plus-function limitation, and the corresponding structure is software, there needs to be an algorithm for the software or else the means-plus-function limitation will be considered indefinite unless the function can be performed by a general purpose computer. *See Function Media, LLC v. Google, Inc.*, 708 F.3d 1310, 1318 (Fed. Cir. 2013) (holding that the corresponding disclosure for a computer-implemented means-plus-function

claim is an algorithm). But that authority is not on point because that definiteness analysis is triggered only where the limitation is a means-plus-function limitation. Accordingly, the Court rejects GM's position, and determines that the phrase is not governed by § 112(f).

2. Court's Construction

For the reasons set forth above, the phrase **"processor configured to cause the circuitry to receive parameters associated with a plurality of radio bearers, determine a plurality of buffer occupancies, wherein each of the plurality of buffer occupancies is associated with one or more radio bearers of the plurality of radio bearers, cause the transmitter to transmit a message including the plurality of buffer occupancies to a network, cause the circuitry to receive a single allocation of uplink resources, select data from the plurality of radio bearers for transmission using the single allocation of uplink resources, wherein the selection of the data occurs using a first iteration and a second iteration, wherein in the first iteration, the selection of the data is selected from a subset of the plurality of radio bearers based on the received parameters, wherein in the second iteration, the selection of the data is based on buffered data for respective radio bearers, and cause the transmitter to transmit a signal including the selected data"** is not subject to § 112(f), and will be given its plain and ordinary meaning.

VI. CONCLUSION

The Court adopts the constructions listed in the Claim Construction Order concurrent with this memorandum. Furthermore, the Parties should ensure that all testimony that relates to the terms addressed in this memorandum is constrained by the Court's reasoning. However, in the presence of the jury the Parties should not expressly or implicitly refer to each other's claim construction positions and should not expressly refer to any portion of this memorandum that is

not an actual construction adopted by the Court. The references to the claim construction process

should be limited to informing the jury of the constructions adopted by the Court.

SIGNED this 1st day of December, 2022.

_____

ALAN D ALBRIGHT
UNITED STATES DISTRICT JUDGE